



GUIDELINES FOR PLAN PREPARATION

PURPOSE AND APPLICATION

THIS SET OF SAMPLE PLAN SHEETS IS INTENDED FOR USE AS A GUIDELINE FOR PREPARING A SET OF HIGHWAY CONSTRUCTION PLANS IN THE STATE OF MICHIGAN. THE EXAMPLES OF VARIOUS SHEETS ILLUSTRATES PREFERRED TECHNIQUES TO ENSURE THE UNIFORMITY, QUALITY AND CONTINUITY OF THE PLANS, BUT DO NOT NECESSARILY REPRESENT A PREFERRED DESIGN. MANY EXAMPLES OF THE VARIOUS PLAN SHEETS HAVE BEEN PROVIDED, BASED ON THE MOST COMMONLY OCCURRING SITUATIONS. HOWEVER, IT IS RECOGNIZED THAT SOME PROJECTS WILL HAVE UNUSUAL CIRCUMSTANCES THAT MAY ALLOW FOR SOME VARIATIONS FROM THE PREFERRED TECHNIQUES CONTAINED HEREIN.

THIS SET IS NOT TO BE CONSIDERED OR USED AS A SINGLE, COORDINATED PLAN, BUT AS A COLLECTION OF INDIVIDUAL SHEET TYPES. IN MANY CASES, COPIES OF ACTUAL PLAN SHEETS HAVE BEEN USED TO DEVELOP THE SHEET CONTAINED HEREIN. SINCE MODIFICATIONS HAVE BEEN MADE TO THESE SHEETS TO DEVELOP AN APPROPRIATE SAMPLE, THEY ARE NOT TO BE CONSIDERED AN OFFICIAL RECORD OF THE PLANS FROM WHICH THEY WERE TAKEN.

IT IS NOT THE INTENT OF THESE GUIDELINES AND SAMPLES TO PROVIDE POLICIES ON THE DESIGN OR CONSTRUCTION OF ROADWAYS. WHERE THE INFORMATION SHOWN ON THE SAMPLE PLAN SHEETS IS IN CONFLICT WITH THE DESIGN STANDARDS OR PRACTICES OF THE STATE OF MICHIGAN AS CONTAINED IN ITS STANDARD SPECIFICATIONS FOR CONSTRUCTION, DESIGN MANUALS, OR DESIGN STANDARDS, THE STANDARDS AND PRACTICES SUPERSEDE ANY SAMPLE PLAN SHEET INFORMATION.

PREPARATION

THESE GUIDELINES FOR PLAN PREPARATION HAVE BEEN DEVELOPED BY THE DESIGN SUPPORT/QUALITY ASSURANCE SECTION. ERRORS AND OMISSIONS SHOULD BE REPORTED TO THE STANDARDS ENGINEER OF THE DESIGN SUPPORT AREA, MICHIGAN DEPARTMENT OF TRANSPORTATION, P.O. BOX 30050, LANSING, MICHIGAN 48909.

SAMPLE PLAN SET TABLE OF CONTENTS

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ENHANCEMENT PLANS.....PENDING
*REMOVAL, CONSTRUCTION AND PROFILE IN THIS ORDER

GENERAL DESIGN GUIDELINES

- 1

SHOW STATION EQUATIONS, BRIDGE NUMBERS AND STATIONING ON MAJOR CROSS ROADS.
- 2

LIST ONLY THE SHEETS THAT APPLY TO THE JOB.
- 3

WHEN AVAILABLE, SHOW TRAFFIC, DESIGN SPEED AND POSTED SPEED IN THIS AREA AND ESAL'S. WHEN DESIGN AND POSTED SPEEDS CHANGE SHOW LIMITS OF CHANGE.
- 4

SHOW FUNDING TYPE, CONTROL SECTION, JOB NUMBER, ROUTE, COUNTY, TOWNSHIP AND CITY OR TOWN, IF APPLICABLE.
- 5

SHOW NORTH ARROW, TOWNSHIP & RANGE ON MAP.
- 6

SHOW TYPE OF WORK AND LENGTH OF PROJECT TO MATCH PROPOSAL.
- 7

SHOW STATE OF MICHIGAN MAP WITH COUNTY FILLED IN.
- 8

TITLE SHEET LEGEND MUST MATCH THE TITLE SHEET MAP.
- 9

CONSULTANT JOBS ONLY - PLACE CONSULTANT BOX ON TITLE SHEET FOR PRIME CONSULTANT ONLY. SUB CONSULTANT WORK FOR THE PRIME MUST HAVE THEIR TITLE BLOCK ON THE SHEETS THEY ARE RESPONSIBLE FOR, NO SIGNATURE REQUIRED.
- MDOT DESIGNED PROJECTS WITH CONSULTANT WORK-IF A CONSULTANT DESIGNS A PORTION OF THE PLANS ON A MDOT DESIGNED PROJECT, THE CONSULTANT MUST SIGN EACH SHEET OF WORK FOR 10 SHEETS OR LESS. IF WORK IS GREATER THAN 10 SHEETS, THE CONSULTANT MUST SIGN THE FIRST SHEET OF WORK AND STATE RESPONSIBLE FOR THE FOLLOWING SHEETS #__ THRU SHEET #__.
- 10

FILL IN: DESIGN UNIT = LOCAL TSC. MDOT COORDINATOR = PROJECT MANAGER.
- 11

THE MAJOR CONTROL SECTION NUMBER WHERE THE MAJORITY OF THE WORK IS SHOWN IS NOT IN PARENTHESIS AND THE MINOR CONTROL SECTIONS ARE SHOWN IN PARENTHESIS
- 12

STRETCH THE BOXES VERTICALLY OR USE A SEPARATE TABLE FOR C.S., J.N. AND FEDERAL NUMBERS WHEN MULTIPLE JN'S ARE TO BE LISTED. JN'S NEED TO BE STACKED SO THE APPROPRIATE FEDERAL NUMBERS CAN BE LISTED NEXT TO THEM.
- 13

LEAVE THE AREAS OF MICHIGAN PROJECT NUMBER BLANK AS THESE NUMBERS ARE FILLED IN BY SPECIFICATIONS AND ESTIMATES.
- 14

PLACE LOWEST JOB NUMBER FIRST, TRANSPORT FILE USES LOWEST JOB NUMBER.
- 15

IF A LOG JOB IS PACKAGED WITH A PLAN JOB, SHOW LIMITS OF LOG JOB ON THE TITLE SHEET. PART 1A IS THE ROAD PLAN INDEX, PART 1B IS THE LOG JOB WITH JOB NUMBER, PART 2 IS ONLY FOR BRIDGE PLANS. A SEPARATE MAP MAY BE REQUIRED IF THE LOG JOB LOCATION CANNOT FIT ON THE MAIN MAP.

OTHER:
THE LOCATION MAP SHOULD PREFERABLY SHOW TWO TRUNKLINE CROSSINGS AND NAMES OF MAJOR CROSSROADS AND CITIES.

SHOW P.O.B. AND P.O.E. STATIONING AND CONTROL SECTION MILE POSTS AND PR NUMBERS.

SHOW ANY DETOURS, IF AVAILABLE.

REFER TO DESIGN MANUAL.

ROAD TITLE SHEET

41 43 45 47

1 2 3 5 7 8

PART 1
ROAD
PLANS

SHEET
NUMBERS

TITLE	1
TYPICAL CROSS SECTIONS	2-5
MISCELLANEOUS DETAIL	6-7
GUARDRAIL DETAILS	8
NOTE SHEET	9
STANDARD SYMBOLS	10
WITNESSES AND BENCHMARKS	11
PLAN	12-16
DETAIL GRADES SHEET	17-18
CULVERT EXTENSION DETAIL SHEETS (JN 84742A)	19-24
MAINTAINING TRAFFIC/CONSTRUCTION STAGING	25
PAVEMENT MARKING	26
LOG OF BORINGS	27-31
SPECIAL DETAILS	32-40

PART 2
BRIDGE
PLANS
JN 58762A

MICHIGAN
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED

MICHIGAN PROJECT

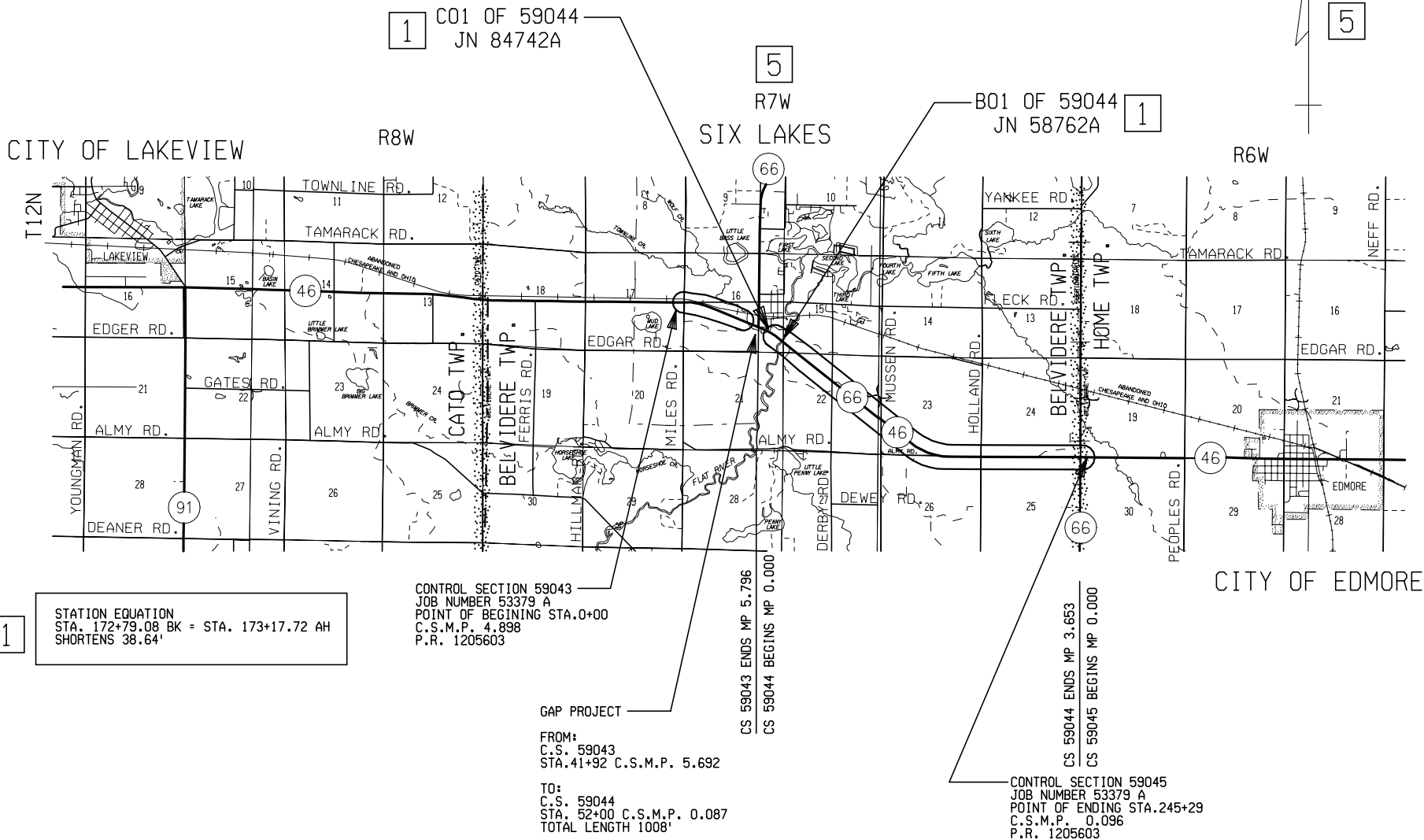
CONTROL SECTION 59044 (59043, 59045)

JOB NUMBER 53379A, 58762A, 84742A

M-46
MONTCALM COUNTY
BELVIDERE & HOME TOWNSHIP

THE IMPROVEMENTS COVERED BY THESE PLANS SHALL BE DONE IN ACCORDANCE WITH THE MICHIGAN DEPARTMENT OF TRANSPORTATION 2003 STANDARD SPECIFICATIONS FOR CONSTRUCTION.

	YEAR 2005	YEAR 2025
A.D.T.	8200	11300
D.H.V.	820	1130
COMM. %	6	7
DESIGN SPEED/POSTED SPEED		
POB TO STA 52+00 60/55 MPH		
STA 52+00 TO POE 55/50 MPH		
FLEXSEAL	1,840,280	



STATION EQUATION
STA. 172+79.08 BK = STA. 173+17.72 AH
SHORTENS 38.64'

CONTROL SECTION 59043
JOB NUMBER 53379 A
POINT OF BEGINING STA.0+00
C.S.M.P. 4.898
P.R. 1205603

GAP PROJECT
FROM:
C.S. 59043
STA.41+92 C.S.M.P. 5.692

TO:
C.S. 59044
STA. 52+00 C.S.M.P. 0.087
TOTAL LENGTH 1008'

CONTROL SECTION 59045
JOB NUMBER 53379 A
POINT OF ENDING STA.245+29
C.S.M.P. 0.096
P.R. 1205603

TITLE SHEET LEGEND

PROPOSED PROJECT	
EXISTING ROADS	
PAVED	
HMA	
UNIMPROVED OR CITY STREET	
SECTION LINE	
TOWNSHIP LINE	
COUNTY LINE	
CITY OR VILLAGE LIMITS	
RAILROADS	

4.465 MILES

CONTRACT FOR: COLDMILLING HMA SURFACE, DETAIL 8 PAVEMENT JOINT AND CRACK REPAIR AND RESURFACING WITH A 12' x 7' SLAB CULVERT EXTENSION, GUARDRAIL UPGRADES AND SAFETY IMPROVMENTS.

APPROVALS

RECOMMENDED FOR APPROVAL	PROJECT MANAGER	DATE
RECOMMENDED FOR APPROVAL	DELIVERY ENGINEER	DATE

MICHIGAN
DEPARTMENT OF TRANSPORTATION
GLORIA J. JEFF - DIRECTOR

APPROVED BY
ENGINEER OF DEVELOPMENT

MDOT
Michigan Department of Transportation

JULIE TERRY
MDOT DESIGN COORDINATOR
HOWARD CITY TSC
DESIGN UNIT

CONTROL SECTION	JOB NUMBER	FEDERAL NUMBERS PROJECT	ITEM	SHEET NO.
59044 (59043, 59045)	53379A 58762A 84742A			1

1 - 1

DATE: 59044 (59043, 59045) - 53379A, 58762A, 84742A
CORRECTED BY: 11
JOB NUMBER
CONTROL SECTION
DATE: 53379/TITLE SHEET.dgn
DRAWN BY:

PART 1	
ROAD PLANS	
SHEET NUMBERS	
TITLE	1
TYPICAL CROSS SECTIONS	2-5
MISCELLANEOUS DETAIL	6-7
GUARDRAIL DETAILS	8
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15

TITLE SHEET LEGEND	
PROPOSED PROJECT	=====
EXISTING ROADS	
PAVED	=====
HMA	=====
UNIMPROVED OR CITY STREET	=====
SECTION LINE	=====
TOWNSHIP LINE	=====
COUNTY LINE	=====
CITY OR VILLAGE LIMITS	=====
RAILROADS	=====

MICHIGAN DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED

MICHIGAN PROJECT

CONTROL SECTION

JOB NUMBER

13

59044 (59043, 59045)

53379A

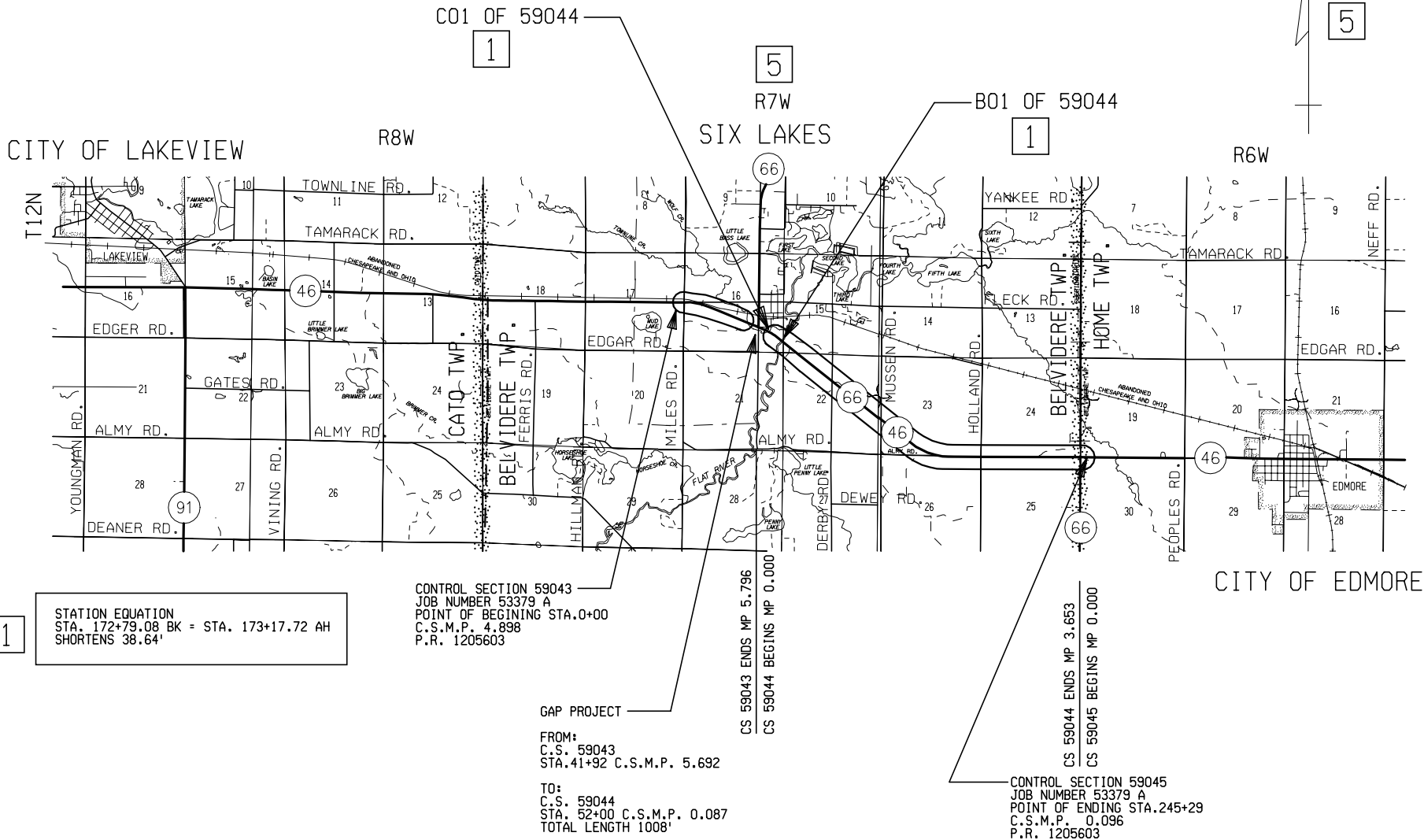
M-46

MONTCALM

COUNTY

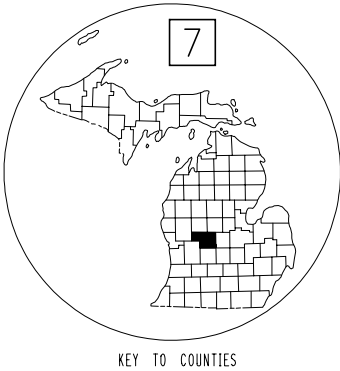
BELVIDERE & HOME

TOWNSHIP



THE IMPROVEMENTS COVERED BY THESE PLANS SHALL BE DONE IN ACCORDANCE WITH THE MICHIGAN DEPARTMENT OF TRANSPORTATION 2003 STANDARD SPECIFICATIONS FOR CONSTRUCTION.

	YEAR 2005	YEAR 2025
A.D.T.	8200	11300
D.H.V.	820	1130
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DESIGN SPEED/POSTED SPEED		
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4.465 MILES

CONTRACT FOR: COLD MILLING HMA SURFACE, DETAIL 8 PAVEMENT JOINT AND CRACK REPAIR AND RESURFACING WITH A 12' x 7' SLAB CULVERT EXTENSION, GUARDRAIL UPGRADES AND SAFETY IMPROVMENTS.

THESE PLANS WERE PREPARED FOR THE
MICHIGAN DEPARTMENT OF TRANSPORTATION
BY

9

APPROVALS

RECOMMENDED FOR APPROVAL	PROJECT MANAGER	DATE
RECOMMENDED FOR APPROVAL	DELIVERY ENGINEER	DATE

MICHIGAN
DEPARTMENT OF TRANSPORTATION
GLORIA J. JEFF - DIRECTOR

APPROVED BY _____ DATE _____
ENGINEER OF DEVELOPMENT



JULIE TERRY
MDOT DESIGN COORDINATOR
HOWARD CITY TSC
DESIGN UNIT

CONTROL SECTION	JOB NUMBER	FEDERAL NUMBERS PROJECT	ITEM	SHEET NO.
59044 (59043, 59045)	53379A	12		1

1-2

DATE: 53379A - 53379A
CORRECTED BY: 59044 (59043, 59045)
JOB NUMBER
CONTROL SECTION
CHECKED BY: 53379A
DATE: 53379A
DRAWN BY: 53379A
FILE NAME: 53379/TITLE SHEET.dgn

GENERAL DESIGN GUIDELINES

- 1 IF AT ALL POSSIBLE, USE A SCALE THAT WILL ALLOW THE ENTIRE JOB TO BE PLACED ON 1 VICINITY MAP SHEET. DO NOT USE ANY SCALE GREATER THAN 1" = 600'.
- 2 CONSULTANT LOGO APPEARS HERE. (TYPICAL ON ALL SHEETS).

OTHER:

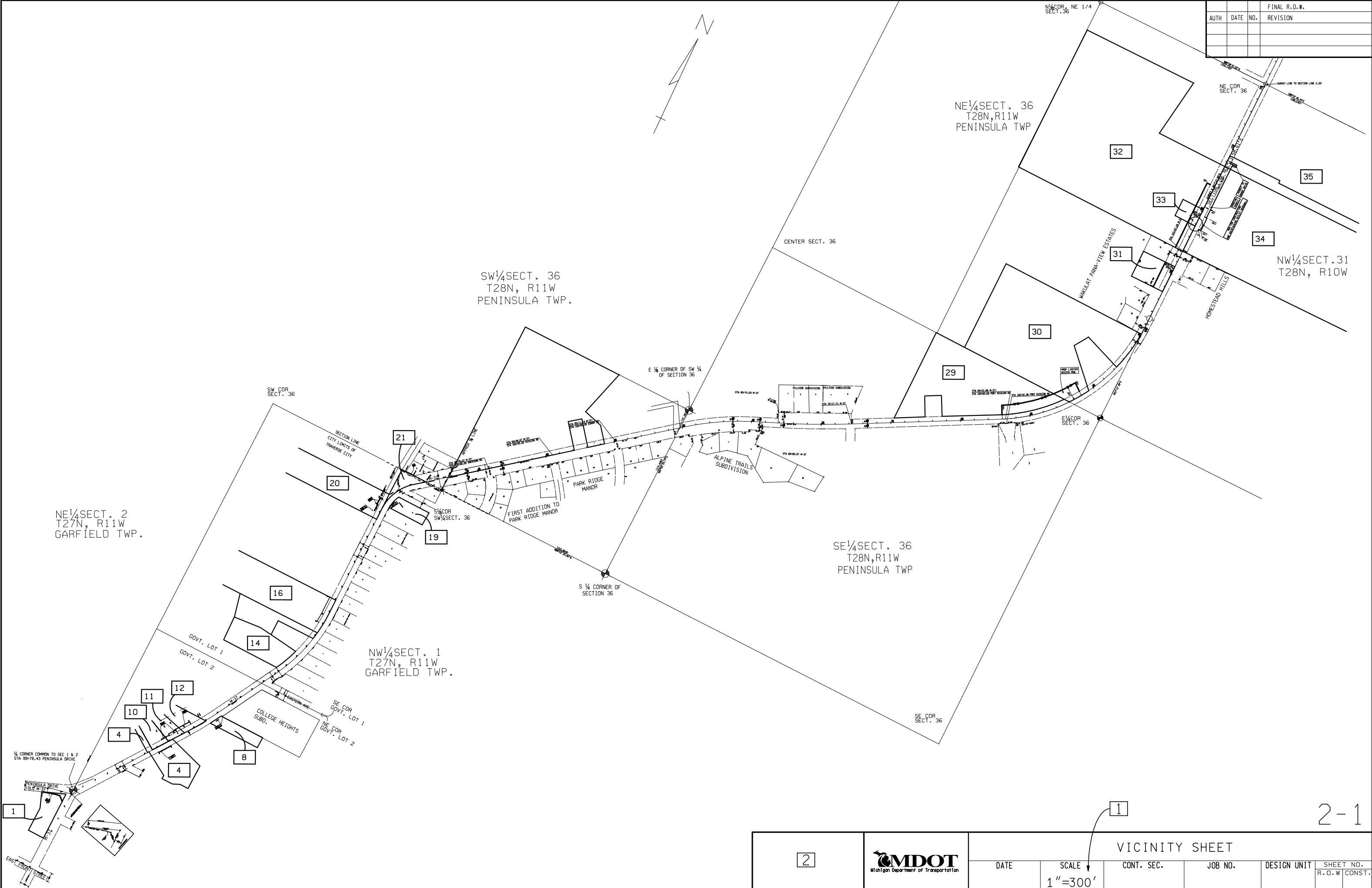
IF R.O.W. IS TO BE REQUIRED ON A PROJECT, THIS SHEET MAY BE PREPARED IN COOPERATION WITH THE REAL ESTATE DIVISION.

ITEMS TO BE INCLUDED ON THE VICINITY MAP INCLUDE:

SECTION NUMBERS AND LINES
TOWNSHIP & RANGE DESIGNATIONS
CITY LIMITS IF APPLICABLE
PARCEL NUMBERS - FOR MARKED FINAL ROW PLANS ONLY. PARCEL NUMBERS ARE NOT REQUIRED ON CONSTRUCTION PLANS.
ALIGNMENT CENTERLINES
PROPOSED R.O.W.
NORTH ARROW
SECTION CORNERS, $\frac{1}{4}$ CORNERS & $\frac{1}{8}$ CORNERS
SUBDIVISIONS

DRAINAGE AND VICINITY MAPS MAY BE COMBINED, ON A PER PROJECT BASIS

VICINITY SHEET



FINAL R.O.W.			
AUTH	DATE	NO.	REVISION

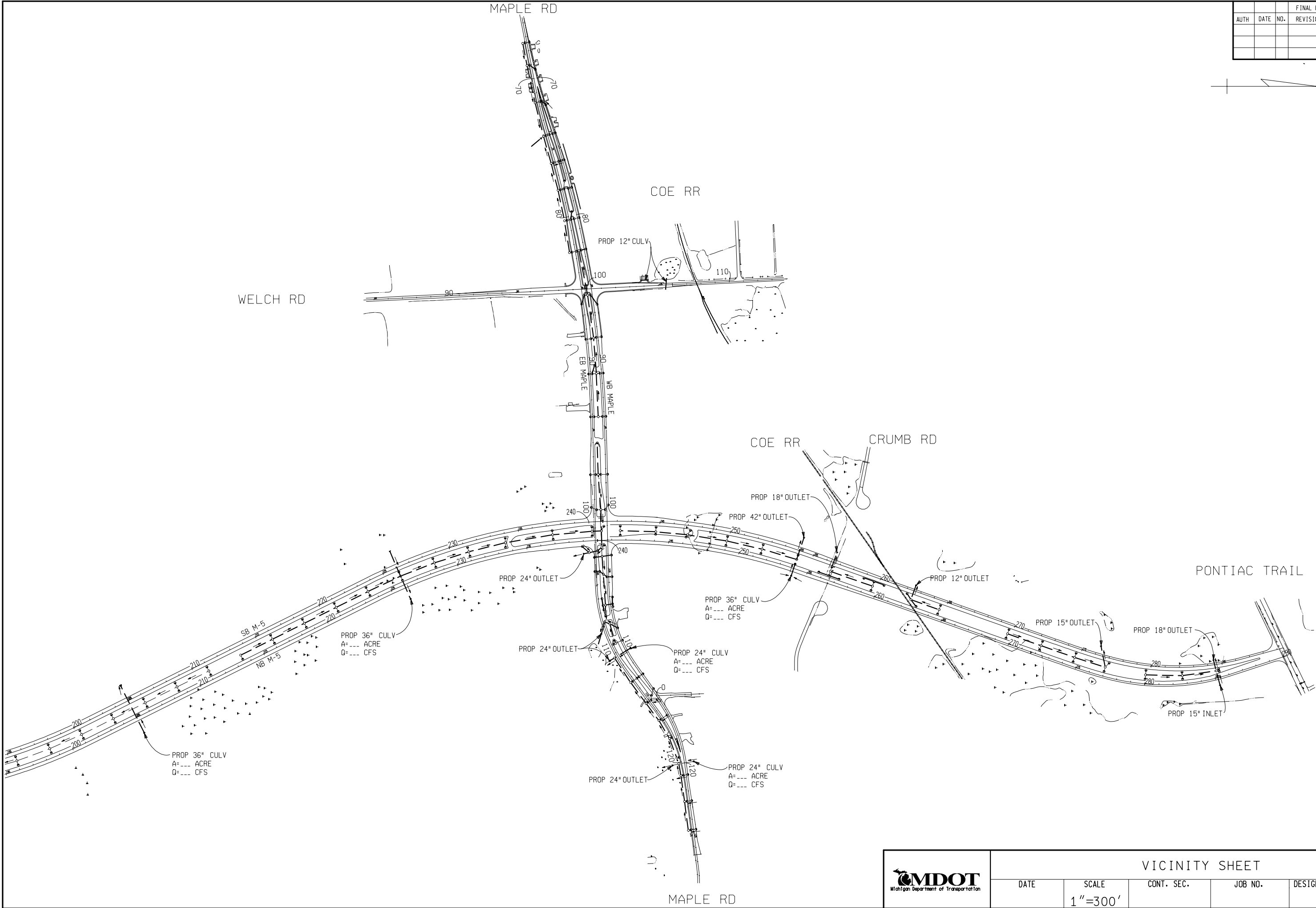
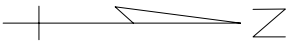
2		MDOT Michigan Department of Transportation		VICINITY SHEET			
DATE		SCALE 1"=300'		CONT. SEC.		JOB NO.	
DESIGN UNIT		SHEET NO.		R.O.W.		CONST.	

FILE NAME: WORKED ON BY: DATE: CHECKED BY: DATE: 2-1


GENERAL DESIGN GUIDELINES

- SHOW COUNTY DRAINS WITHIN THE PROJECT LIMITS.
- CLEARLY SHOW THE DIRECTION OF FLOW FOR ALL PROPOSED AND EXISTING DRAINS, DITCHES AND CULVERTS.
- SHOW NAMES OF STREETS, HIGHWAY AND RAILROADS.
- ENLARGE THE SIZE OF THE STATION TEXT AT EVERY FIFTH STATION. EX 275, 280, 285 ETC.
- SHOW NORTH ARROW
- SHOW SIZES OF CULVERTS, INLETS AND OUTLETS.
- SHOW ONLY THE OUTLINE OF PROPOSED ROADWAY.
- FOR DRAINAGE AREAS IN EXCESS OF TWO SQUARE MILES, OR DESIGN RUNOFFS IN EXCESS OF 500 CFS, A TABULATION IS REQUIRED. REFER TO CHAPTER 5, APPENDIX D, OF THE DRAINAGE MANUAL FOR ADDITIONAL INFORMATION.
- DRAINAGE AND VICINITY MAPS MAY BE COMBINED, ON A PER PROJECT BASIS.

FINAL R.O.W.			
AUTH	DATE	NO.	REVISION



3-1

	VICINITY SHEET						
	DATE	SCALE	CONT. SEC.	JOB NO.	DESIGN UNIT	SHEET NO.	
		1"=300'				R.O.W	CONST.

DATE:

WORKED ON BY:

DATE:

CHECKED BY:

FILE NAME:

TYPICAL CROSS SECTIONS MAY BE THE MOST IMPORTANT STEP IN DEVELOPING CONSTRUCTION PLANS, AND AS SUCH, SHOULD BE DEVELOPED AS COMPLETE AS POSSIBLE.

THESE GUIDES ARE NOT INTENDED TO BE FINAL DESIGN TYPICALS, RATHER, THEY ARE INTENDED TO ILLUSTRATE AND PROMOTE UNIFORM DRAFTING CONVENTIONS. THEY ALSO ILLUSTRATE VARIOUS METHODS OF PAVEMENT REHABILITATION THAT MDOT MAY APPLY. THERE ARE ALSO FREEWAY MAINLINE AND RAMP TYPICALS IN APPENDIX 6A OF THE ROAD DESIGN MANUAL.

- 1
- EXISTING TYPICAL CROSS SECTIONS SHOULD BE DEVELOPED AS COMPLETE AS POSSIBLE FROM: OLD PLANS, CORES AND FIELD INSPECTIONS. ALL LAYERS OF ALL MATERIALS SHOULD BE SHOWN INCLUDING SAND AND AGGREGATE, IF KNOWN.
- 2
- USE CONTINUOUS STATIONING WITH NO STATION OVERLAP. INSURE THE ENTIRE PROJECT HAS A DESIGNATED TYPICAL CROSS SECTION.
- 3
- FOR HORIZONTAL DIMENSIONS, USE DECIMALS, NOT FEET AND INCHES(ONLY FOR FRACTIONAL DIMENSIONS, EX 12' NOT 12.00' ; 2.5' NOT 2' 6" ; 2.67' NOT 2' 8"). VERTICAL DIMENSIONS ARE TYPICALLY IN INCHES (18" , NOT 1' -6" OR 1.5')
- 4
- SHOW A SMALL CIRCLE (O) WHERE A SLOPE BREAKS.
- 5
- REMEMBER THAT MOST OLDER CONCRETE PAVEMENTS WERE CONSTRUCTED WITH A PARABOLIC CROWN. (YOU CAN FIND THE ACTUAL PARABOLIC FACTORS IN THE OLD 1960 ROAD DESIGN MANUAL, AND OLD PLANS). THIS SHOULD BE SHOWN ON THE TYPICAL CROSS SECTIONS. IT BECOMES IMPORTANT WHEN MAKING CHANGES TO THE CROWN, ON PROJECTS THAT HAVE AN HMA OVER LAY, AS TO WHETHER THE COLD MILLING IS TO BE DONE TO A UNIFORM THICKNESS, OR PROFILE COLD MILLED AT 2%. IT ALSO MEANS THAT THE HMA THICKNESS IS PROBABLY NOT A UNIFORM THICKNESS.
- 6
- PARABOLIC CROWNS ARE PARTICULARLY IMPORTANT IN SUPERELEVATED SECTIONS. ON A ROADWAY SUPERELEVATED WITH A PARABOLIC CROWN, THE ENTIRE ROADWAY WAS SUPERELEVATED SO THAT ON THE HIGH SIDE THE SUPERELEVATION BECOMES MUCH LESS THAN ON THE LOW SIDE. FOR EXAMPLE, IF A ROADWAY WAS SUPERELEVATED AT 4% (FROM EDGE TO EDGE), THE LOW SIDE MAY BE ABOUT 6%, WHILE THE HIGH SIDE MAY BE ABOUT 2%±.
- 7
- REMEMBER THAT HMA PAVERS PAVE TO A STRAIGHT LINE ON TOP. FOR EXAMPLE, ON A THREE LANE ROAD, THE PAVED SURFACE COULD ACTUALLY BE THREE DISTINCT TANGENT LINES FOR CROSS SLOPE UNLESS THE ROADWAY HAS BEEN WEDGED TO OBTAIN A DESIGNED CROWN. IT IS BEST TO REVIEW THE OLD PLANS FOR THIS CROWN INFORMATION.
- 8
- REMEMBER THAT THE ORIGINAL CROWN POINT ON MANY OLDER TWO LANE FREEWAYS WAS IN THE CENTER OF THE MEDIAN SIDE LANE, IN ANTICIPATION OF A THIRD LANE. MOST OF THESE OLD PAVEMENTS (BUILT PRIOR TO 1976) WERE PARABOLIC CROWNS.
- 9
- TYPICAL CROSS SECTIONS SHOULD BE DRAWN TO A HORIZONTAL SCALE. HOWEVER, FOR THE ABOVE REASONS, VERTICAL SCALE EXAGGERATION IS OFTEN APPLIED. IN FACT, GREATLY EXAGGERATED DETAILS MAY BE QUITE USEFUL. IN ADDITION TO THE "NORMAL" SCALE TYPICAL CROSS SECTIONS, AN ADDITIONAL TYPICAL CROSS SECTION MAY BE USEFUL WHICH IS EXAGGERATED, AS A MISCELLANEOUS DETAIL, AS MUCH AS 10V:1H. SHOW HORIZONTAL AND VERTICAL SCALE IN THE TITLE BLOCK.

10

SUPERELEVATED TYPICAL CROSS SECTIONS SHOULD SHOW STATION RANGES WITH THE FOLLOWING FORMAT. IF SPACE DOES NOT PERMIT ALL THESE LINES UNDER THE SECTION TO APPLY, THEN IT SHOULD APPEAR OFF TO THE RIGHT SIDE OF THE SHEET, WITH STA A TO STA F BEING LISTED UNDER THE SECTION TO APPLY.

SECTION TO APPLY
STA A TO STA B, CROWN RUNOUT
STA B TO STA C, TRANSITION
STA C TO STA D, FULL SUPER
STA D TO STA E, TRANSITION
STA E TO STA F, CROWN RUNOUT

REFER TO STANDARD PLAN R-107 SERIES FOR THE PROPER LOCATION OF THE TRANSITION IN RELATION TO THE PC AND PT OF THE CURVE.

NOTE: ON THOSE OCCASIONS WHEN THERE ARE SEVERAL CURVES FOR ONE TYPICAL, AND NO SPACE TO INCLUDE ALL THE ABOVE INFORMATION, LIST STA A TO STA F UNDER THE SECTION TO APPLY, AND HAVE THE REMAINING INFORMATION ON THE PLAN AND/OR PROFILE SHEETS.

- 11
- DIMENSION LINES SHOULD BE ADDED TO THE TYPICAL CROSS SECTIONS TO SHOW THE LATERAL LIMITS OF PAVEMENT REMOVAL AND ROADWAY GRADING. THIS WILL HELP CLARIFY THE INTENT AS TO WHETHER SHOULDERS, CURB AND GUTTER, PARKING, ETC IS TO BE REMOVED WITH THE ITEM OF PAVEMENT REMOVAL, OR AS C&G REMOVAL OR WITH EXCAVATION/GRADING OPERATIONS. ALSO NOTE IF THERE IS TO BE A DOUBLE PAYMENT FOR REMOVAL OF COMPOSITE PAVEMENTS.
- 12
- IT IS PREFERRED THAT THE EXISTING TYPICAL CROSS SECTION AND PROPOSED TYPICAL CROSS SECTION COVER A STATION RANGE ON THE SAME TYPICAL CROSS SECTION SHEET. TRANSPOSE THE BOTTOM LINE OF THE PROPOSED TYPICAL CROSS SECTION, OR THE "GRADE TO THIS LINE" (2 WT), ON TO THE EXISTING TYPICAL CROSS SECTION, THUS SHOWING THE EXTENT OF THE GRADING OPERATIONS.
- 13
- ON THE PROPOSED TYPICAL CROSS SECTION FOR A RECONSTRUCTION PROJECT, REMOVE ALL EXISTING PAVEMENT STRUCTURE EXCEPT THE TOP LINE OF THE EXISTING TYPICAL CROSS SECTION. AGAIN, THIS WILL ILLUSTRATE THE RELATIONSHIP OF THE EXISTING TO THE PROPOSED.
- 14
- PROPOSED WORK ITEMS ON THE TYPICAL CROSS SECTIONS ARE TO BE IN BOLD CAPITAL LETTERS. USE THE PROPER FONTS, SIZES AND LEVELS AS OUTLINED IN THE CADD WORKSTATION GUIDES AND PARAMETERS. "PROPER PAY ITEMS" ON THE PLANS SHEETS ARE TO MATCH THE PAY ITEM CODE BOOK, FOR TRNSPORT PES PURPOSES.
- 15
- JOINT LEGEND AND OTHER CROSS SECTION NOTES SHOULD APPEAR IN THE LOWER RIGHT CORNER OF THE FIRST TYPICAL CROSS SECTION SHEET. THESE NOTES CAN BE FOUND IN THE TYPICAL CROSS SECTION CELL LIBRARY. USE ONLY FOR LONGITUDINAL JOINTS.
- 16
- THE HMA APPLICATION ESTIMATE SHOULD APPEAR ONLY ON THE FIRST TYPICAL SHEET THAT SHOWS AN HMA SECTION.
- 17
- SHOW STATION EQUATIONS.
- 18
- LABEL THE EXISTING LANE AND PROPOSED LANE. LABEL THE EXISTING AND PROPOSED SHOULDERS.

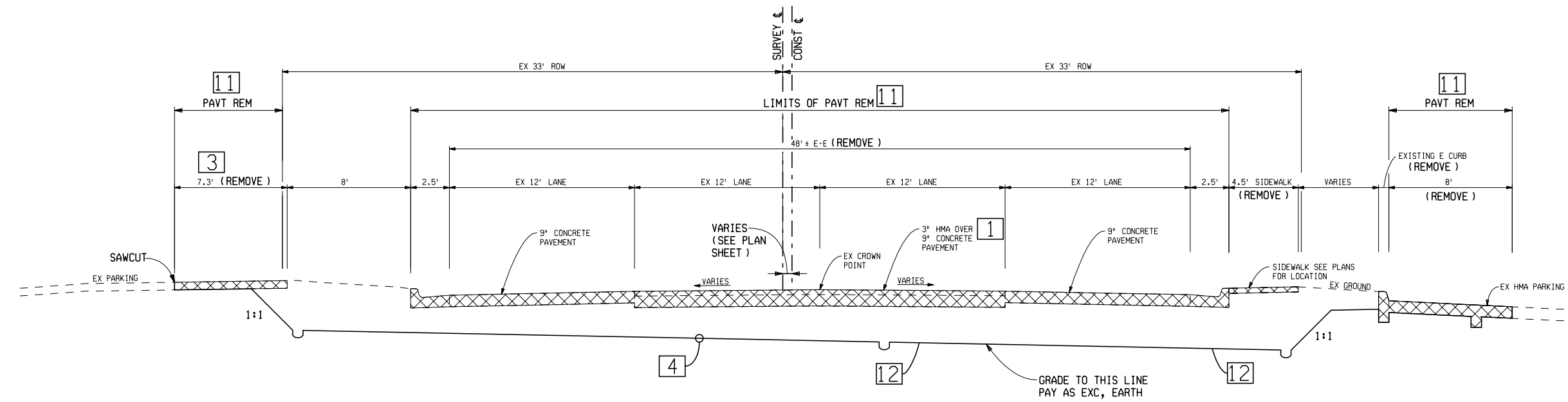
THE FOLLOWING ITEMS MAY REQUIRE SEPARATE HALF SECTION TYPICALS OR DETAILED SKETCHES.

GUARDRAIL SECTIONS	FILL/CUT SECTIONS	LANE WIDENING
SHOULDER SECTIONS	CURB AND GUTTER SECTIONS	RAMPS
CROSSROADS	TURN LANES	CROSSOVERS

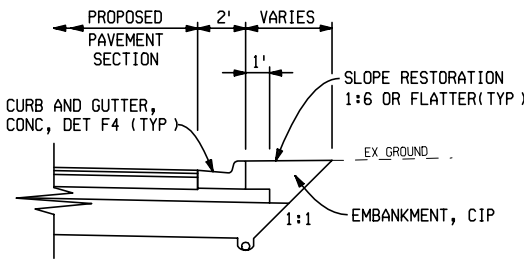
TYPICAL CROSS SECTIONS

NOTE: BOXED NUMBERS REFER TO THE TYPICAL CROSS SECTION PREPARATION GUIDES LOCATED AT THE BEGINNING OF THIS SECTION

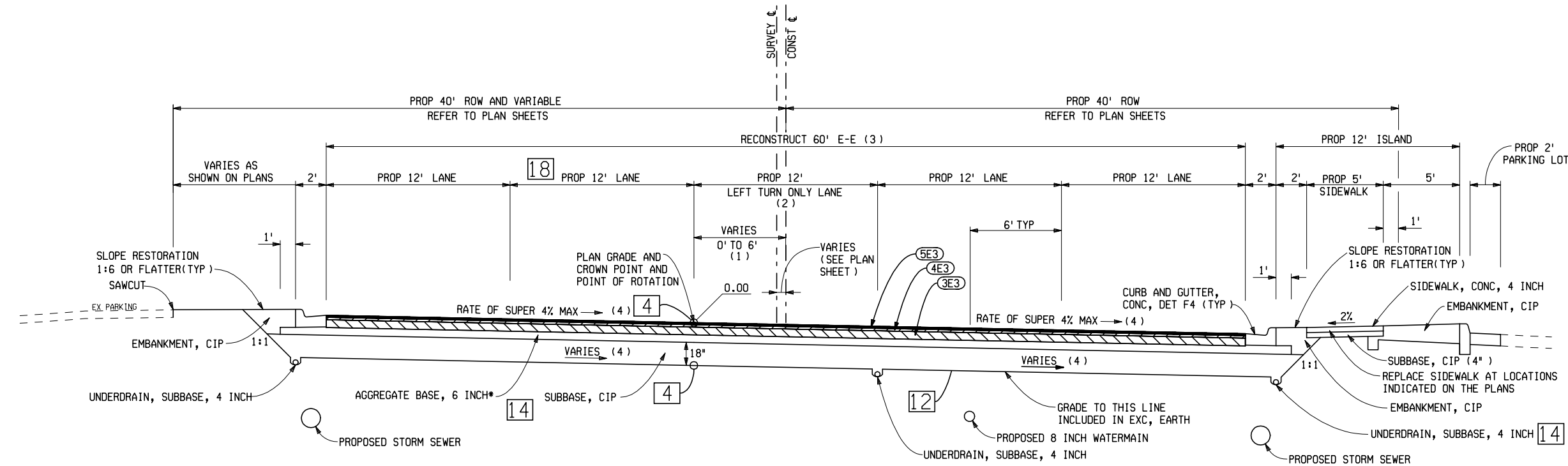
			FINAL R.O.W.
AUTH	DATE	NO.	REVISION



EXISTING TYPICAL SECTION FOR M-99 2
TO APPLY: STA 192+11.91 TO 196+19.56



PROPOSED SIDE CONDITION (NO SIDEWALK)
TO APPLY: STA 192+11.91 TO 193+55.14



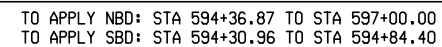
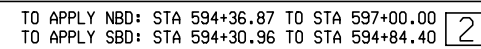
PROPOSED TYPICAL SECTION FOR 5 LANE / M-99
TO APPLY: STA 192+11.91 TO 196+19.56 10

- (1) CROWN POINT TRANSITION
TRANSITION FROM 0' TO 6'
FROM 192+11.91 TO 193+34.41
6' OFFSET
FROM 193+34.41 TO 196+19.56
- (2) CENTER LANE
TRANSITION FROM 0' TO 12'
FROM 192+11.91 TO 193+34.41
12' LANE
FROM 193+34.41 TO 196+19.56
- (3) PROPOSED PAVEMENT WIDTH
TRANSITION FROM 48' TO 60'
FROM 192+11.91 TO 193+34.41
60' WIDTH
FROM 193+34.41 TO 196+19.56
- 10 (4) SUPER ELEVATION
4% SUPER ELEVATION
FROM 192+11.91 TO 192+47.14
TRANSITION FROM 4% TO NC
FROM 192+47.14 TO 196+19.56

*ADDITIONAL DEPTH OF AGGREGATE BASE UNDER THE CURB AND GUTTER IS NOT PAID FOR SEPERATELY, BUT IS INCLUDED IN THE PAY ITEM AGGREGATE BASE, 6 INCH

			FINAL R.O.W.
AUTH	DATE	NO.	REVISION

			FINAL R.O.W.
AUTH	DATE	NO.	REVISION



(B) - LONGITUDINAL BULKHEAD JOINT, SEALED ACCORDING TO STANDARD PLAN R-41 SERIES, SYMBOL (B)

(D) - LONGITUDINAL LANE TIE JOINT WITH TIE BARS, SEALED ACCORDING TO STANDARD PLAN R-41 SERIES, SYMBOL (D).

(BD) - OPTIONAL B OR D JOINT.

(E5) - LONGITUDINAL EXPANSION JOINT SEALED ACCORDING TO STANDARD PLAN R-49 SERIES, SYMBOL (E5).

4-3



DATE	SCALE	CONT. SEC.	JOB NO.	DESIGN UNIT	SHEET NO.	
	1" = 6' 9				R.O.W	CONST.

CHECKED BY:	DATE:	WORKED ON BY:	DATE:

NOTE: BOXED NUMBERS REFER TO THE TYPICAL CROSS SECTION PREPARATION GUIDES LOCATED AT THE BEGINNING OF THIS SECTION

			FINAL R.O.W.
AUTH	DATE	NO.	REVISION

CLEAN EX DRAINAGE
(EXISTING DR STRUCTURES AND CROSS
LEADS WITHIN THE LIMITS OF THE PROP
HMA SURFACING SHALL BE CLEANED
AT 100% MDDT FUNDING)

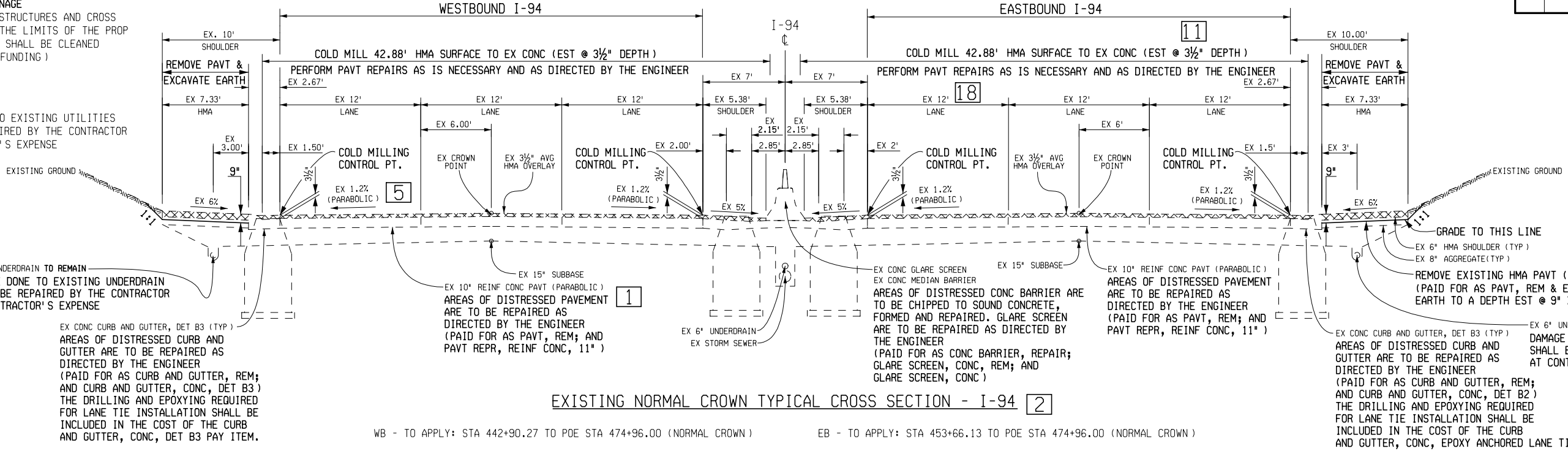
DAMAGE DONE TO EXISTING UTILITIES
SHALL BE REPAIRED BY THE CONTRACTOR
AT CONTRACTOR'S EXPENSE

EX 6" UNDERDRAIN TO REMAIN
DAMAGE DONE TO EXISTING UNDERDRAIN
SHALL BE REPAIRED BY THE CONTRACTOR
AT CONTRACTOR'S EXPENSE

EX CONC CURB AND GUTTER, DET B3 (TYP)
AREAS OF DISTRESSED CURB AND
GUTTER ARE TO BE REPAIRED AS
DIRECTED BY THE ENGINEER
(PAID FOR AS CURB AND GUTTER, REM;
AND CURB AND GUTTER, CONC, DET B3)
THE DRILLING AND EPOXYING REQUIRED
FOR LANE TIE INSTALLATION SHALL BE
INCLUDED IN THE COST OF THE CURB
AND GUTTER, CONC, DET B3 PAY ITEM.

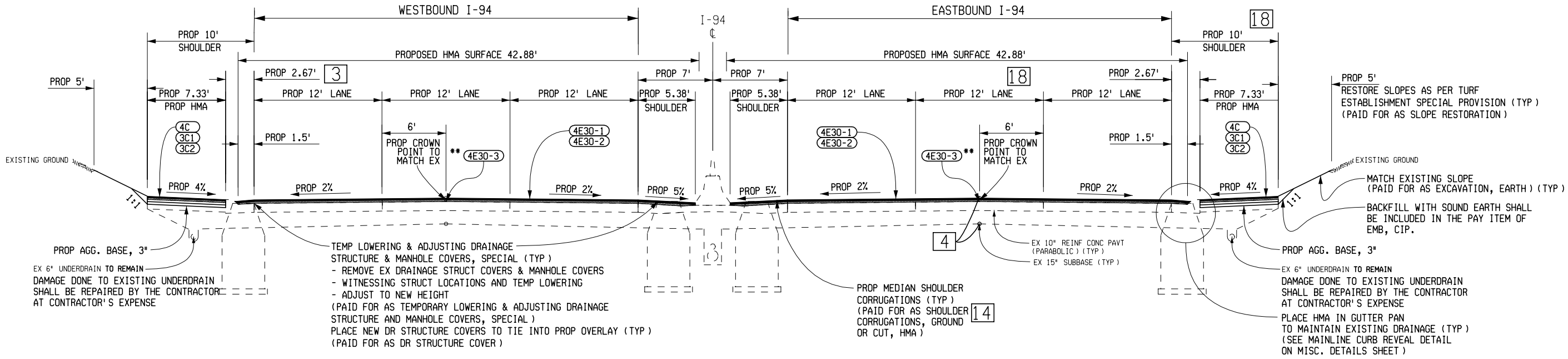
WESTBOUND I-94

EASTBOUND I-94



EXISTING NORMAL CROWN TYPICAL CROSS SECTION - I-94

WB - TO APPLY: STA 442+90.27 TO POE STA 474+96.00 (NORMAL CROWN) EB - TO APPLY: STA 453+66.13 TO POE STA 474+96.00 (NORMAL CROWN)



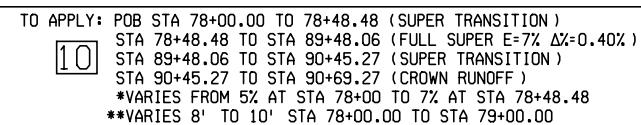
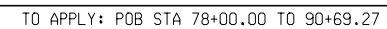
PROPOSED NORMAL CROWN TYPICAL CROSS SECTION - I-94

WB - TO APPLY: STA 442+90.27 TO POE STA 474+96.00 (NORMAL CROWN) EB - TO APPLY: STA 453+66.13 TO POE STA 474+96.00 (NORMAL CROWN)

** (FOR WEDGING SEE MISC. DETAIL SHEET)

	HMA SURFACING COMPOSITE PAVEMENT URBAN FRWY				
	DATE	SCALE	CONT. SEC.	JOB NO.	DESIGN UNIT
	03/07/05	1" = 5'			
					SHEET NO.
					R.O.W CONST.

			FINAL R.O.W.
AUTH	DATE	NO.	REVISION

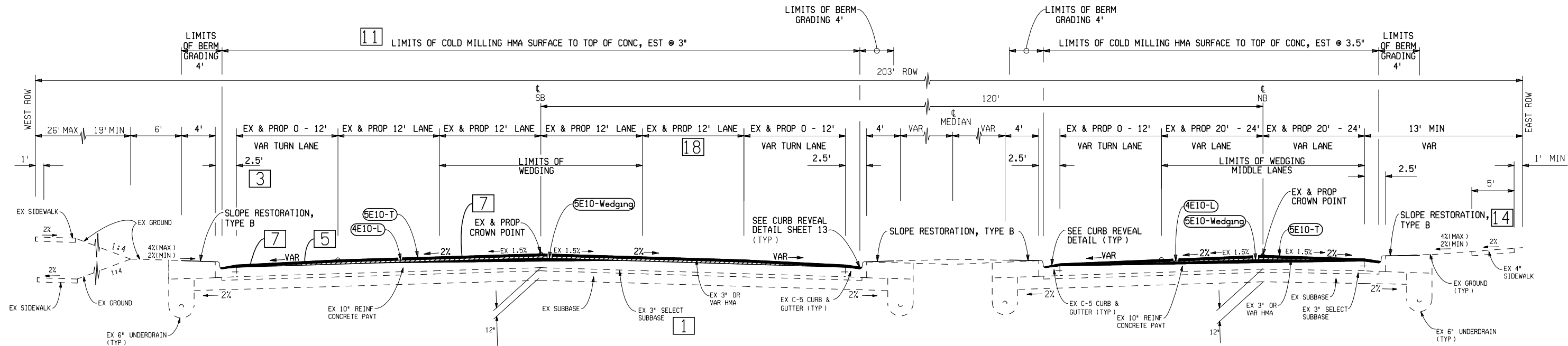


DATE	SCALE	CONT. SEC.	JOB NO.	DESIGN UNIT	SHEET NO.	
	1" = 2' 9				R.O.W	CONST.

CHECKED BY:	DATE:	WORKED ON BY:	DATE:

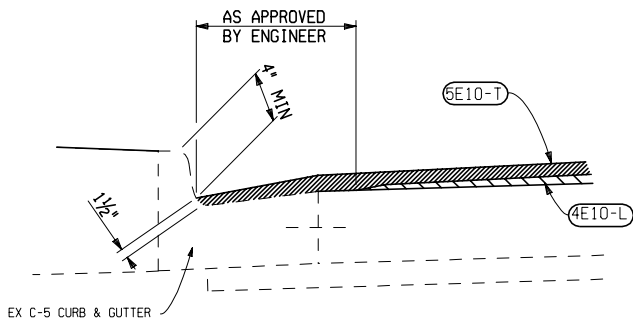
NOTE: BOXED NUMBERS REFER TO THE TYPICAL CROSS SECTION PREPARATION GUIDES LOCATED AT THE BEGINNING OF THIS SECTION

			FINAL R.O.W.
AUTH	DATE	NO.	REVISION



EXISTING & PROPOSED TYPICAL SECTION

TO APPLY TO NB: STA 476+74.41 TO STA 482+32
TO APPLY TO SB: STA 476+24.41 TO STA 482+32



CURB REVEAL DETAIL


NOTE:
THERE ARE EXISTING FULL DEPTH CONCRETE PATCHES WITHIN THE COLD-MILLING HMA LIMITS. THE FULL DEPTH CONCRETE PATCHES SHALL BE MILLED AND WILL BE PAID FOR AS COLD MILLING HMA SURFACE.

HMA APPLICATION ESTIMATE

IDENT NO.	ITEM	RATE LB/SYD	PERFORMANCE GRADE	REMARKS
5E10-T	HMA, 5E10, HIGH STRESS	165	70-22P	TOP COURSE AWI = 260
4E10-L	HMA, 4E10, HIGH STRESS	220	70-22P	LEVELING COURSE
5E10	HAND PATCHING	VAR	70-22P	5E10
5E10-Wedging	HMA, 5E10, HIGH STRESS	0-264	70-22P	WEDGING (NORTHBOUND)
5E10-Wedging	HMA, 5E10, HIGH STRESS	0-333	70-22P	WEDGING (SOUTHBOUND)
BA	HMA, APPROACH, HIGH STRESS	385	70-22P	TOP & LEVELING (2 COURSE 5E10 & 4E10)
	*BOND COAT	0-0.10		

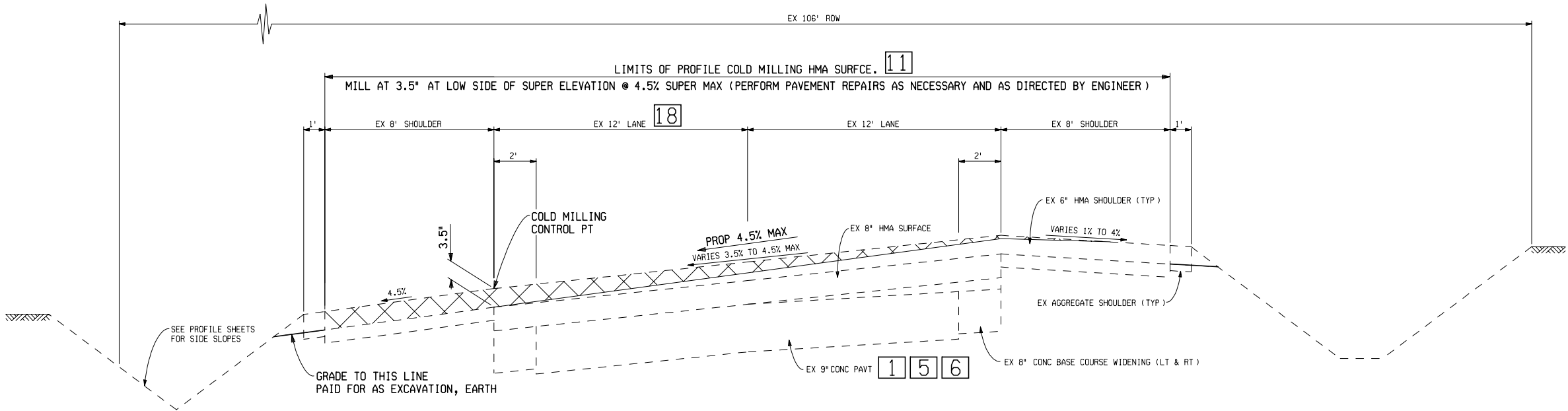
*FOR INFORMATION ONLY

4-6

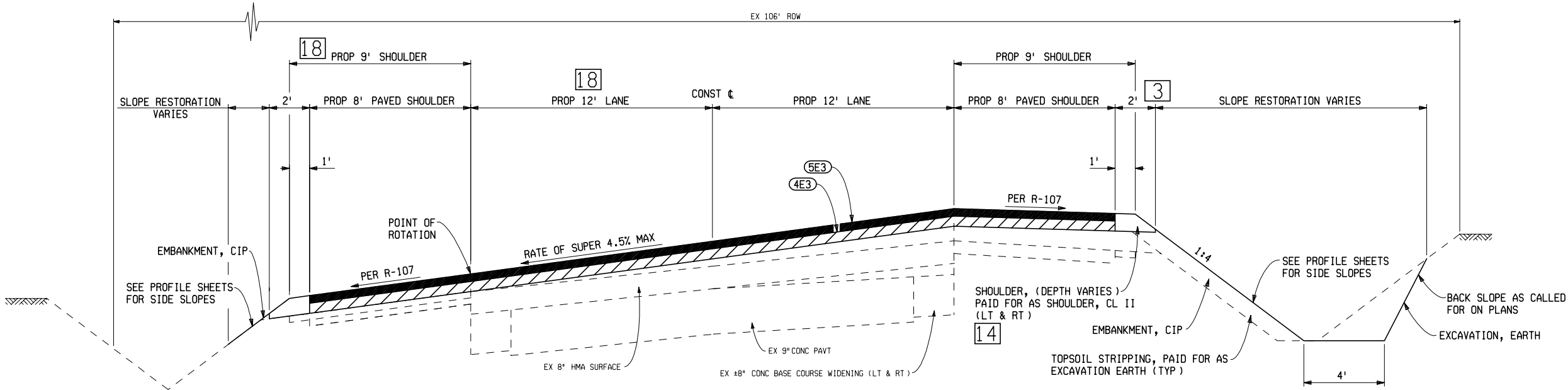
		RESURFACING & WEDGING - URBAN				
DATE	SCALE 1" = 6'	CONT. SEC.	JOB NO.	DESIGN UNIT	SHEET NO. R.O.W. CONST.	
	9					

NOTE: BOXED NUMBERS REFER TO THE TYPICAL CROSS SECTION PREPARATION GUIDES LOCATED AT THE BEGINNING OF THIS SECTION

			FINAL R.O.W.
AUTH	DATE	NO.	REVISION



EXISTING TWO LANE SUPERELEVATED SECTION
OLD M-14 (ANN ARBOR ROAD)
TO APPLY : STA 1052+49.94 TO STA 1065+37.59




EXISTING TWO LANE SUPERELEVATED SECTION
OLD M-14 (ANN ARBOR ROAD)
TO APPLY: STA 1052+49.94 TO STA 1052+74.94 (CROWN RUNOUT)
STA 1052+74.94 TO STA 1055+30.79 (SUPER TRANSITION)
STA 1055+30.79 TO STA 1062+56.74 (FULL SUPER E=4.5% Δ=XX)
STA 1062+56.74 TO STA 1065+12.59 (SUPER TRANSITION)
STA 1065+12.59 TO STA 1065+37.59 (CROWN RUNOUT)

HMA APPLICATION ESTIMATE

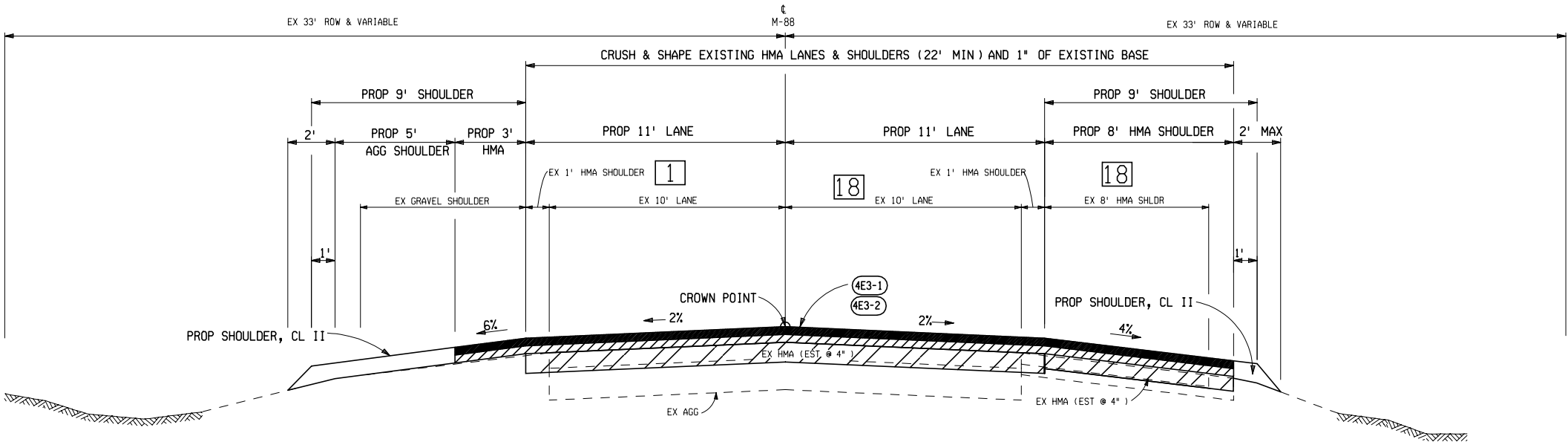
IDENT NO.	ITEM	RATE PER SYD	PERFORMANCE GRADE	REMARKS
5E3	HMA, 5E3	165*	64-22	TOP COURSE AWI = 260
4E3	HMA, 4E3	220*	64-22	LEVELING COURSE
	* BOND COAT	0-0.10 GAL		

*FOR INFORMATION ONLY

	RURAL - SUPERELEVATED - HMA					
	DATE	SCALE HORZ. 1" = 3' VERT. 1" = 1'	CONT. SEC.	JOB NO.	DESIGN UNIT	SHEET NO. R.O.W CONST.

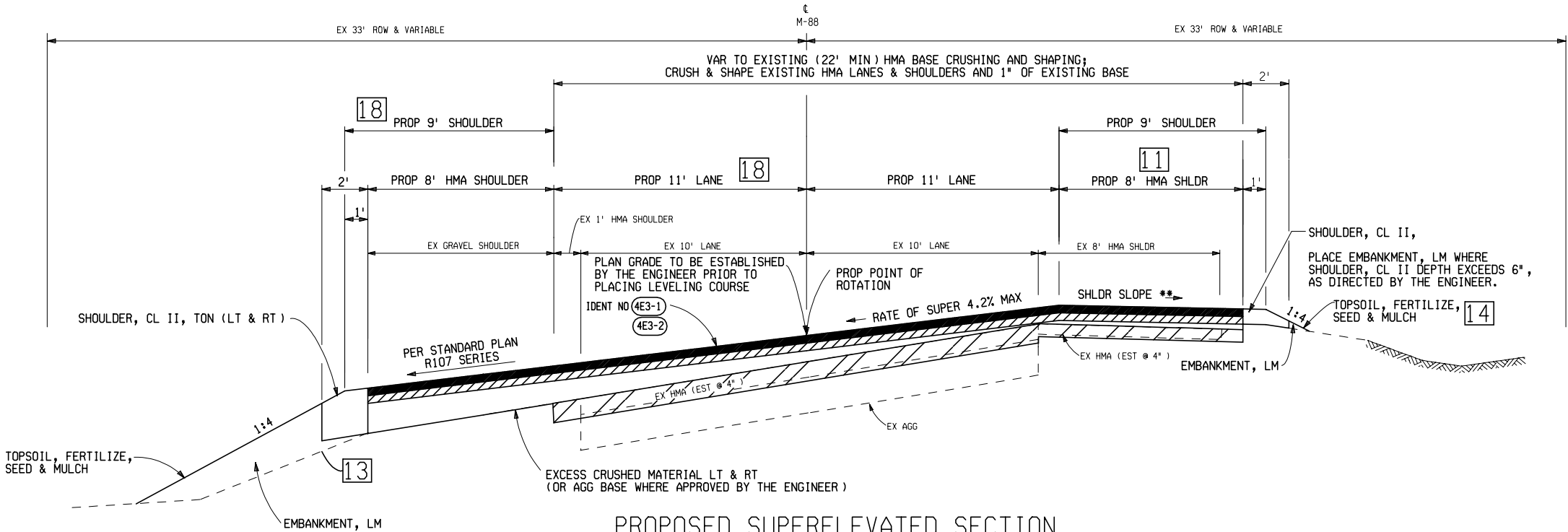
NOTE: BOXED NUMBERS REFER TO THE TYPICAL CROSS SECTION PREPARATION GUIDES LOCATED AT THE BEGINNING OF THIS SECTION

			FINAL R.O.W.
AUTH	DATE	NO.	REVISION



PROPOSED NORMAL SECTION

TO APPLY: STA 59+48.23 TO STA 187+75.21
STA 194+16.61 TO STA 300+03.00 (POE)



PROPOSED SUPERELEVATED SECTION

TO APPLY: STA 187+75.21 TO STA 188+30.21 CROWN RUNOUT
STA 188+30.21 TO STA 189+45.71 SUPER TRANS
STA 189+45.71 TO STA 192+46.11 FULL SUPER $e=4.2\%$ $\Delta e=0.40$
STA 192+46.11 TO STA 193+61.61 SUPER TRANS
STA 193+61.61 TO STA 194+16.61 CROWN RUNOUT

* PROP FULL PAVED SHOULDER WIDTHS AS SPECIFIED ON PLANS
** PROP SUPERELEVATION AND SHOULDER SLOPES AS PER STANDARD PLAN R107 SERIES OR AS SHOWN ON PLANS

HMA APPLICATION ESTIMATE

IDENT NO.	ITEM	RATE PER SYD	PERFORMANCE GRADE	REMARKS
4E3-1	HMA, 4E3	220*	64-28	TOP COURSE AWI = 260
4E3-2	HMA, 4E3	220*	64-28	LEVELING COURSE
3E3	HMA, 3E3	330*	58-28	BASE COURSE
APP-1	HMA APPROACH	440*	64-28	HMA 4E3, 2 COURSES
APP-2	HMA APPROACH	275*	64-28	HMA 4E3
	* BOND COAT	0-0.10 GAL		

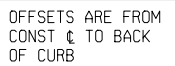
*FOR INFORMATION ONLY



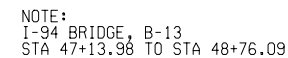
TRUNKLINE RURAL - HMA CRUSH & SHAPE

DATE	SCALE	CONT. SEC.	JOB NO.	DESIGN UNIT	SHEET NO.
	1" = 3'				R.O.W CONST.

			FINAL R.O.W.
AUTH	DATE	NO.	REVISION



* 34.70' TO GUTTER LINE

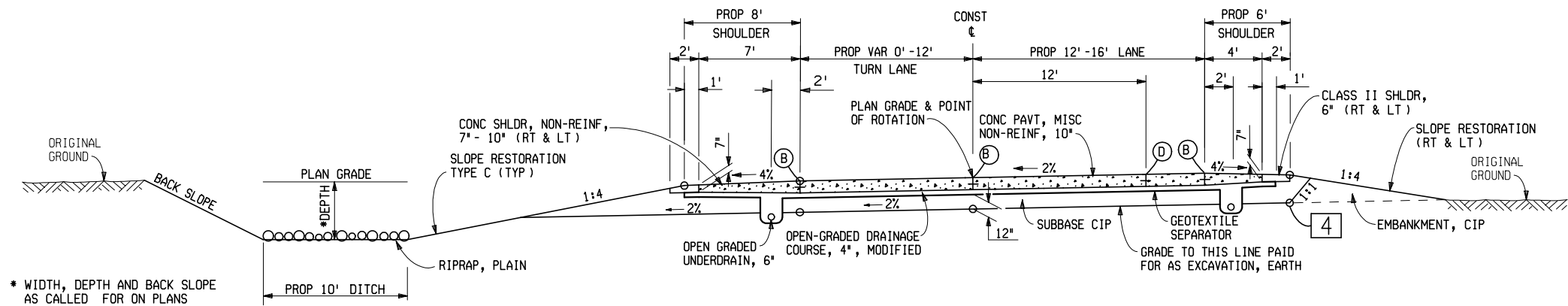


(3) TRANSITION CROWN POINT FROM CONST C AT STA 45+73.43 TO 5.00' LEFT OF CONST C AT STA 46+59.64.
TRANSITION CROWN POINT FROM 5.00' LEFT OF CONST C AT STA 46+59.64 TO 6.00' LEFT OF CONST C AT STA 47+13.98.

CHECKED BY:	DATE:	WORKED ON BY:	DATE:

NOTE: BOXED NUMBERS REFER TO THE TYPICAL CROSS SECTION PREPARATION GUIDES LOCATED AT THE BEGINNING OF THIS SECTION

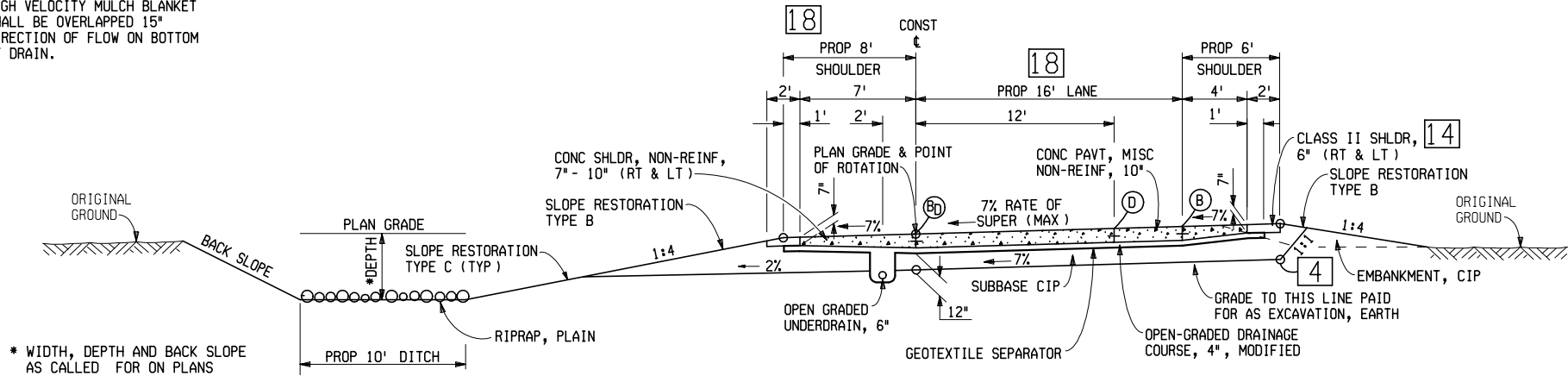
			FINAL R.O.W.
AUTH	DATE	NO.	REVISION



PROPOSED SB M-53 OFF RAMP
CONCRETE NORMAL SECTION

TO APPLY:
STA 451+75 TO STA 455+92

NOTE: HIGH VELOCITY MULCH BLANKET
SHALL BE OVERLAPPED 15"
DIRECTION OF FLOW ON BOTTOM
OF DRAIN.

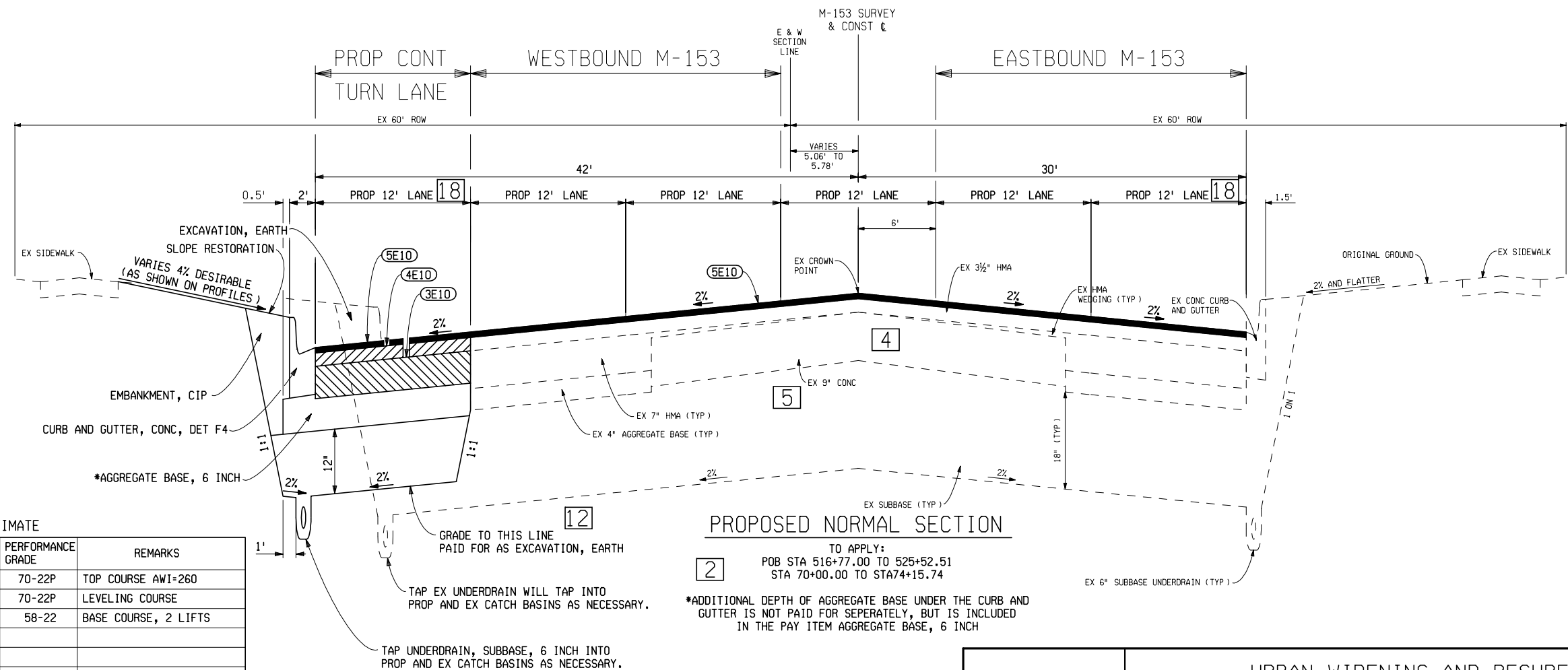


PROPOSED SB M-53 OFF RAMP
CONCRETE SUPERELEVATED LEFT

TO APPLY: STA 455+92 TO STA 456+17 (CROWN RUNOFF)
STA 456+17 TO STA 458+16 (TRANSITION)
STA 458+16 TO STA 463+40 (FULL SUPER E=7% Δ=0.50)

2 10

			FINAL R.O.W.
AUTH	DATE	NO.	REVISION



IDENT NO.	ITEM	RATE PER SYD	PERFORMANCE GRADE	REMARKS
5E10	HMA, 5E10, HIGH STRESS	165	70-22P	TOP COURSE AWI=260
4E10	HMA, 4E10, HIGH STRESS	220	70-22P	LEVELING COURSE
3E10	HMA, 3E10	660	58-22	BASE COURSE, 2 LIFTS
	* BOND COAT	0-0.10 GAL		



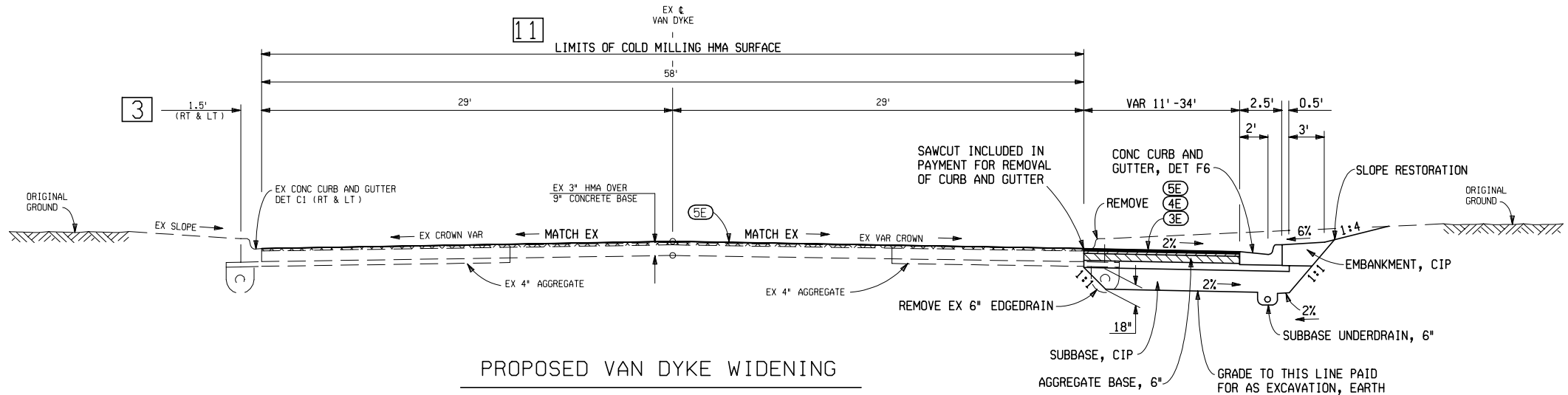
Michigan Department of Transportation

DATE	SCALE	CONT. SEC.	JOB NO.	DESIGN UNIT	SHEET NO.	
	HORZ. 1"=5' VERT. 1"=1'				R.O.W	CONST.

CHECKED BY:	DATE:	WORKED ON BY:	DATE:

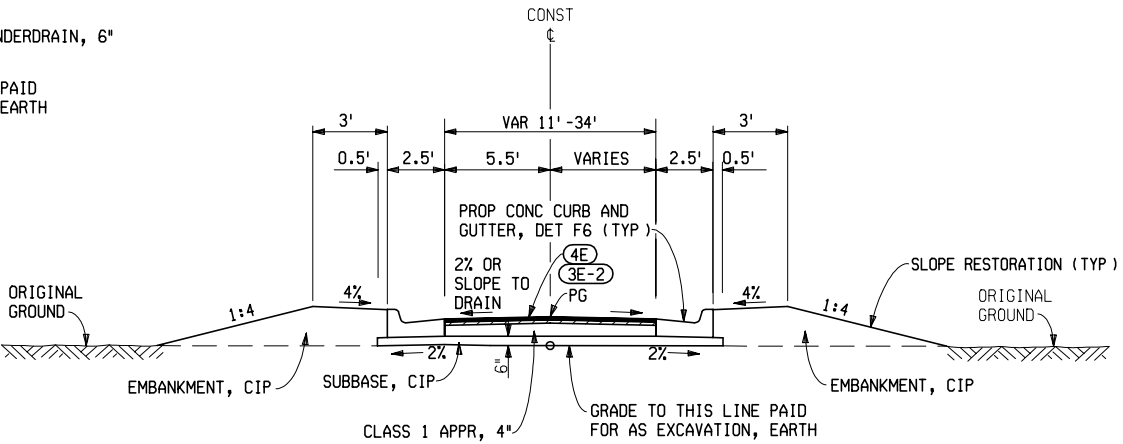
NOTE: BOXED NUMBERS REFER TO THE TYPICAL CROSS SECTION PREPARATION GUIDES LOCATED AT THE BEGINNING OF THIS SECTION

			FINAL R.O.W.
AUTH	DATE	NO.	REVISION

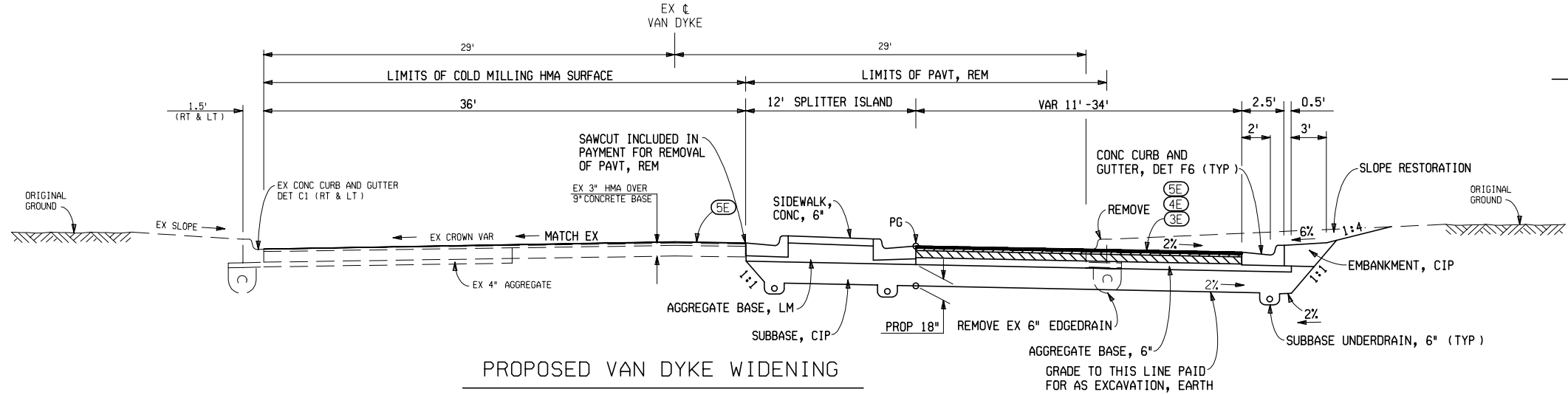


PROPOSED VAN DYKE WIDENING

TO APPLY:
STA 361+00 TO STA 364+10
*COLD MILLING TO BE DONE ON UPPER 2\"/>



PROPOSED VAN DYKE DRIVE TYPICAL



PROPOSED VAN DYKE WIDENING

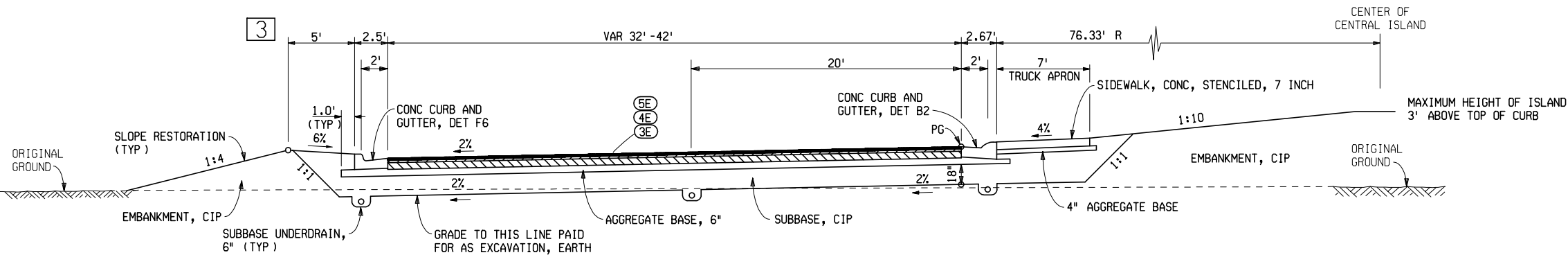
TO APPLY:
STA 360+00 TO STA 361+00
*COLD MILLING TO BE DONE ON UPPER 2\"/>

NOTE:
AGGREGATE BASE SHALL BE 21AA CRUSHED
LIMESTONE OR BLAST FURNACE SLAG.

DATE: 12/17/03
WORKED ON BY: MAS
DATE: 06-27-02
WORKED ON BY: GILLER
DATE:
CHECKED BY:
FILE NAME: Vanduketup.dgn

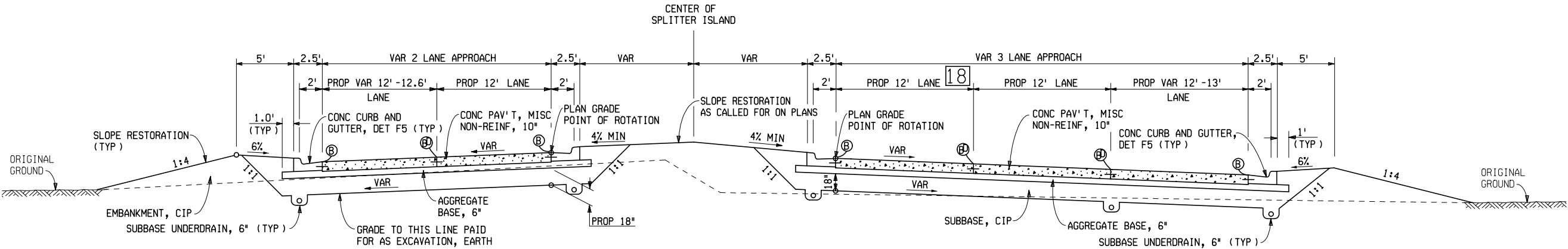
NOTE: BOXED NUMBERS REFER TO THE TYPICAL CROSS SECTION PREPARATION GUIDES LOCATED AT THE BEGINNING OF THIS SECTION

AUTH	DATE	NO.	FINAL R.O.W.
			REVISION



ROUNDAABOUT TYPICAL

TO APPLY:
TO THE ENTIRE ROUNDAABOUT



ROUNDAABOUT APPROACH TYPICAL

TO APPLY:
ALL APPROACHES TO THE ROUNDAABOUT

NOTE:
AGGREGATE BASE SHALL BE 21AA CRUSHED
LIMESTONE OR BLAST FURNACE SLAG.

HMA APPLICATION ESTIMATE

IDENT NO.	ITEM	RATE PER SYD	PERFORMANCE GRADE	REMARKS	
5E	HMA 5E10, HIGH STRESS	2201b	70-22P	TOP AWI=260	PAID FOR AS HIGH STRESS HMA APPROACH
4E	HMA 4E10, HIGH STRESS	2201b	70-22P	LEVELING	PAID FOR AS HIGH STRESS HMA APPROACH
3E	HMA 3E10	6601b	58-22	BASE CRSE TWO LIFTS AT 3301b/Syd	PAID FOR AS HMA APPROACH
3E-2	HMA 3E10	3301b	58-22	BASE CRSE DRIVEWAYS	PAID FOR AS HMA APPROACH
	* BOND COAT	0-0.10 GAL			

*FOR INFORMATION ONLY

LONGITUDINAL JOINT LEGEND	
(B)	- LONGITUDINAL BULKHEAD JOINT, SEALED ACCORDING TO STANDARD PLAN II-41 SERIES, SYMBOL (B)
(D)	- LONGITUDINAL LANE TIE JOINT
(BD)	- OPTIONAL B OR D JOINT.
(L2)	- LONGITUDINAL LANE TIE JOINT

4-13

MDOT Michigan Department of Transportation		TYPICAL CROSS SECTION - ROUNDAABOUT				
DATE	SCALE 1" = 5'	CONT. SEC.	JOB NO.	DESIGN UNIT	SHEET NO. R.O.W CONST.	
	9					

DATE: 12/17/03

WORKED ON BY: MAS

DATE: 06-27-02

WORKED ON BY: GILLER

DATE:

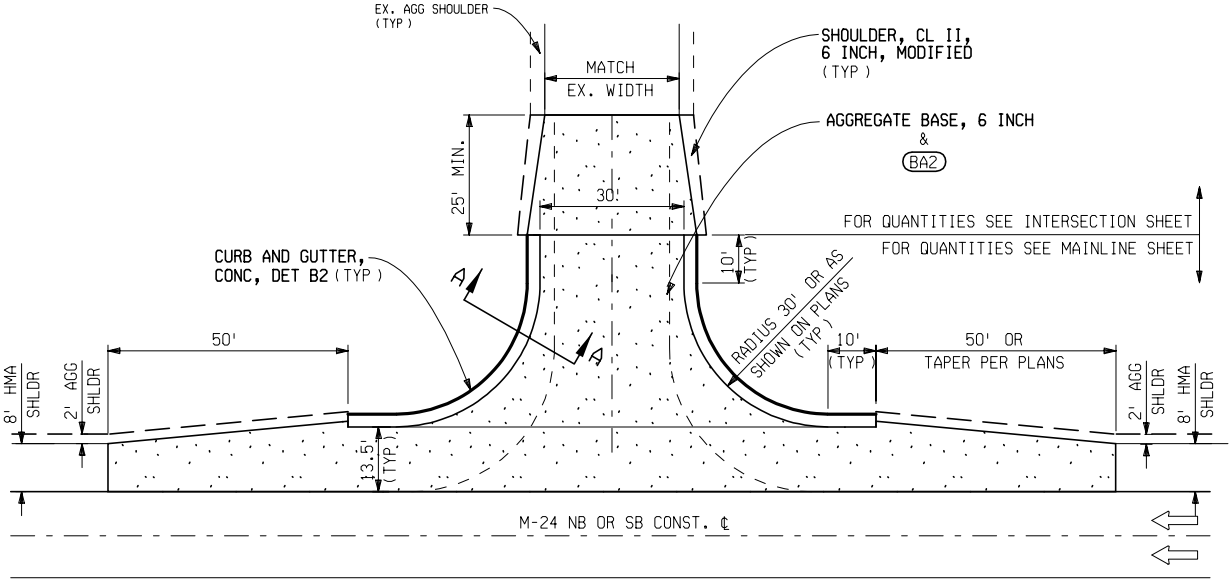
CHECKED BY:

FILE NAME: VandykeUp.dgn

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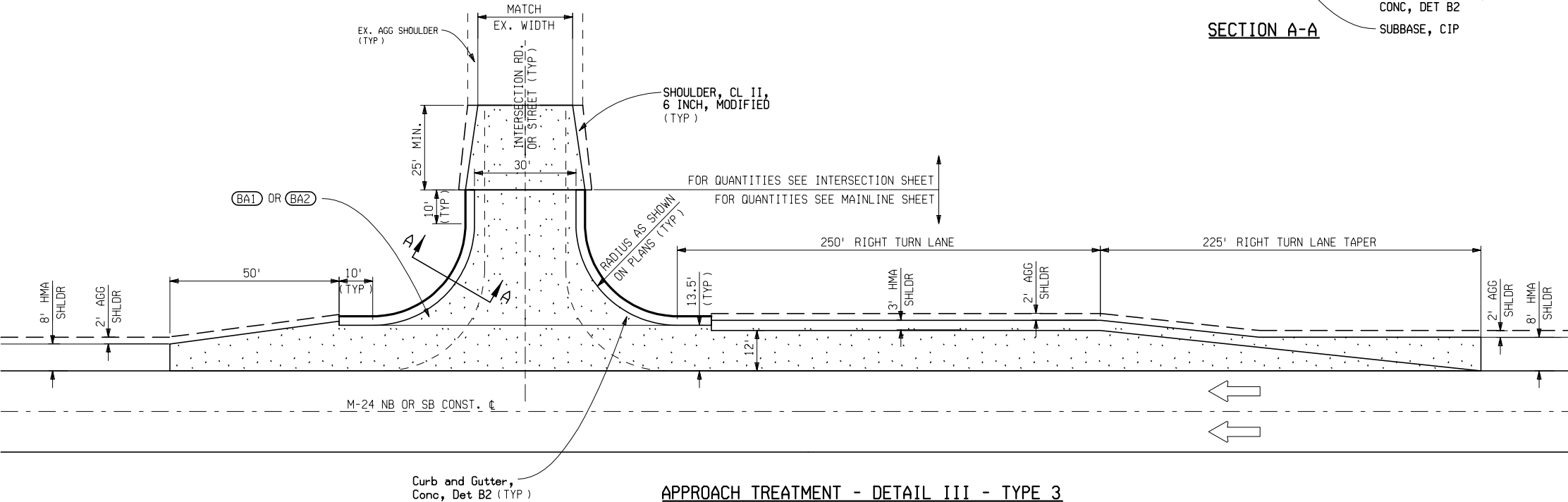
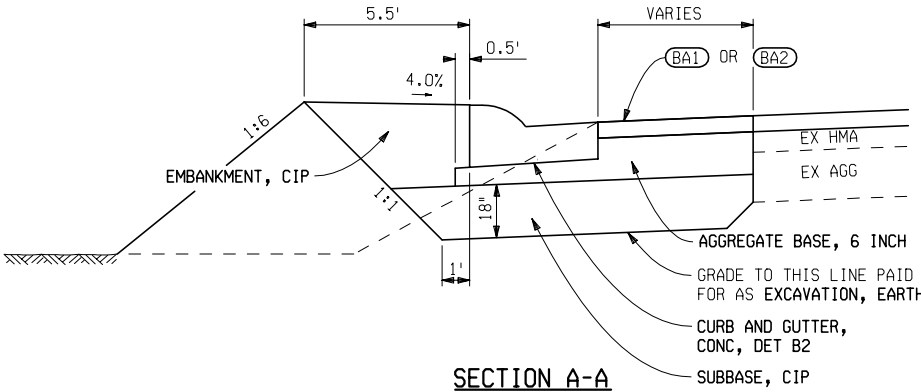
- 5-1) DETAILS SHOWN ARE MAINTENANCE CROSSOVERS, DETAIL M AND L DRIVEWAYS WITH CURB AND GUTTER AND A DRIVEWAY GRADING DETAIL.
- 5-2) DETAILS SHOWN ARE DIFFERENT TYPES OF DETAIL III INTERSECTIONS. THESE INTERSECTIONS SHOULD HAVE A TYPICAL CROSS SECTION.
- 5-3) DETAILS SHOWN ARE VARIOUS DRIVEWAYS IN RURAL AREAS, LONGITUDINAL HMA SURFACING DETAIL AND SOME DITCHING TYPICAL 1/2 CROSS SECTIONS WITH FLUSH SHOULDERS OR WITH CURB AND GUTTER.
- 5-4) DETAILS SHOWN ARE FOR A DRIVEWAY CULVERT EXTENSION.
- 5-5) DETAIL SHOWN ARE FOR GUARDRAIL LAYOUT DETAILS.

FINAL R.O.W.			
AUTH	DATE	NO.	REVISION



APPROACH TREATMENT - DETAIL III - TYPE 1

TO APPLY: MARY LOU LN
PAMELA LN
ROBERTS DR
CALEY RD



APPROACH TREATMENT - DETAIL III - TYPE 3

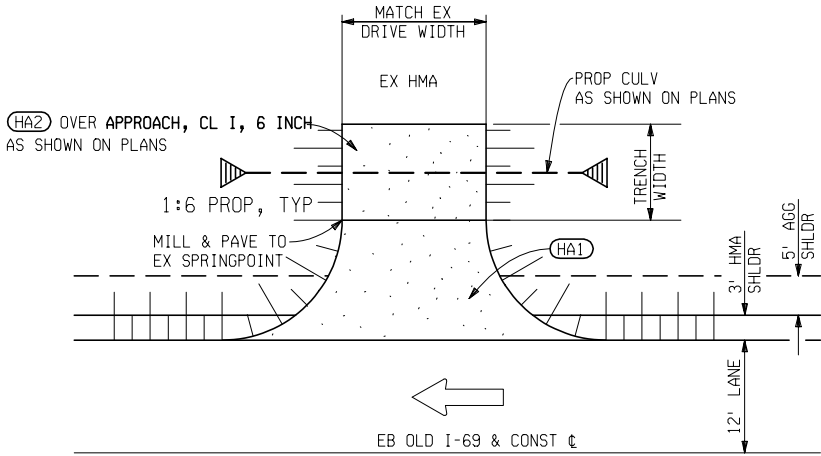
TO APPLY: BRAUER RD (BA2) BEST RD (BA2)
SB M-24 @ BROCKER RD (BA1) KILE RD (BA2)

5-2

MISCELLANEOUS DETAILS					
	DATE	SCALE	CONT. SEC.	JOB NO.	DESIGN UNIT
		NONE			
					SHEET NO.
					R.O.W CONST

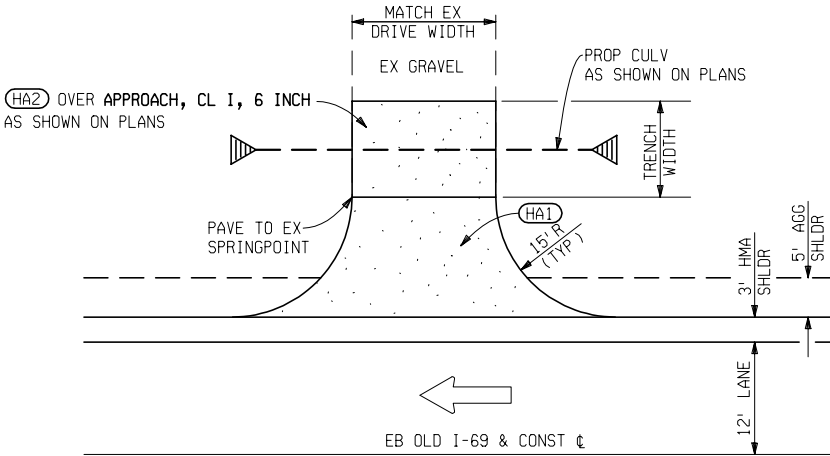
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AUTH	DATE	NO.	REVISION	FINAL R.O.W.



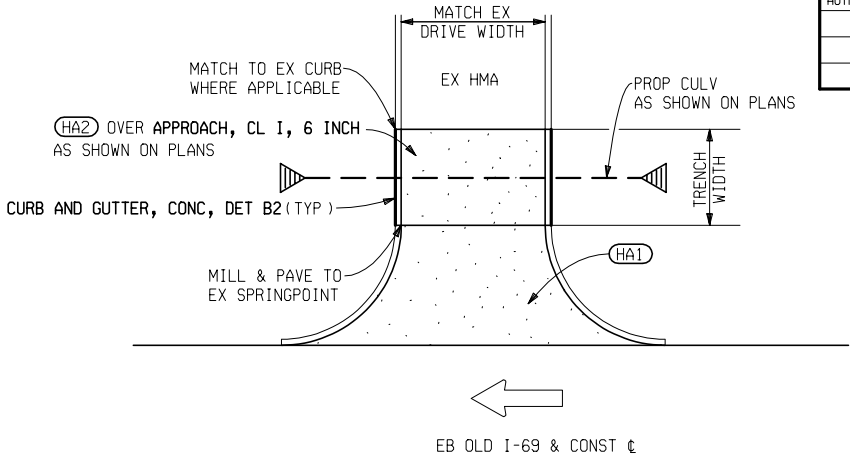
OVERLAY DETAIL HMA DRIVE

TO APPLY: STA 751+72 LT
STA 753+85 LT
STA 752+69 LT
STA 759+79 LT
STA 761+44 LT



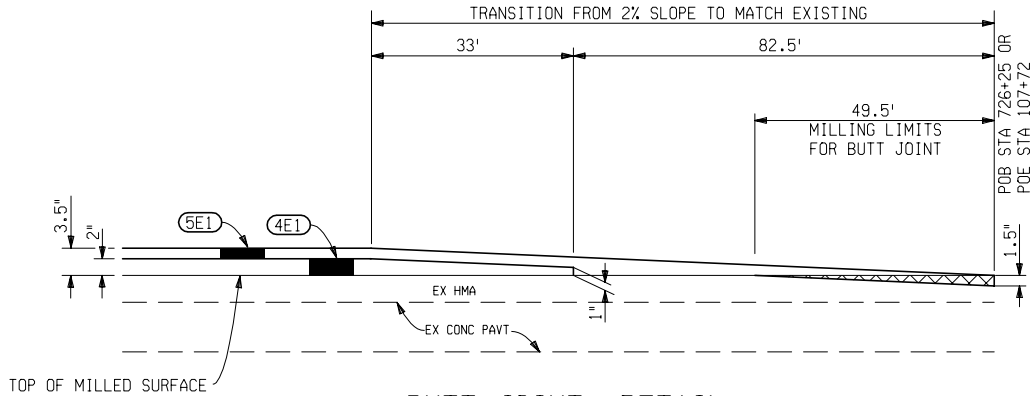
OVERLAY DETAIL GRAVEL DRIVE

TO APPLY: STA 734+84 RT STA 754+99 LT
STA 737+53 RT STA 757+69 LT
STA 748+53 RT STA 758+85 LT
STA 746+96 LT STA 763+89 LT



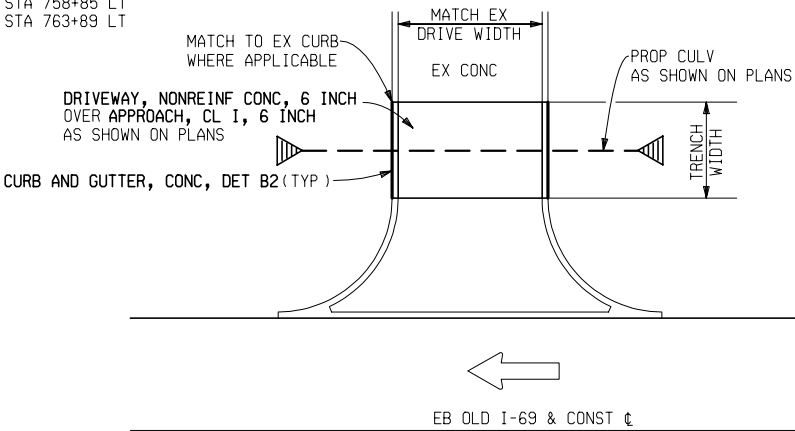
OVERLAY DETAIL HMA W/ C&G DRIVE

TO APPLY: STA 730+88 LT
STA 736+14 LT
STA 730+33 RT
STA 731+60 RT



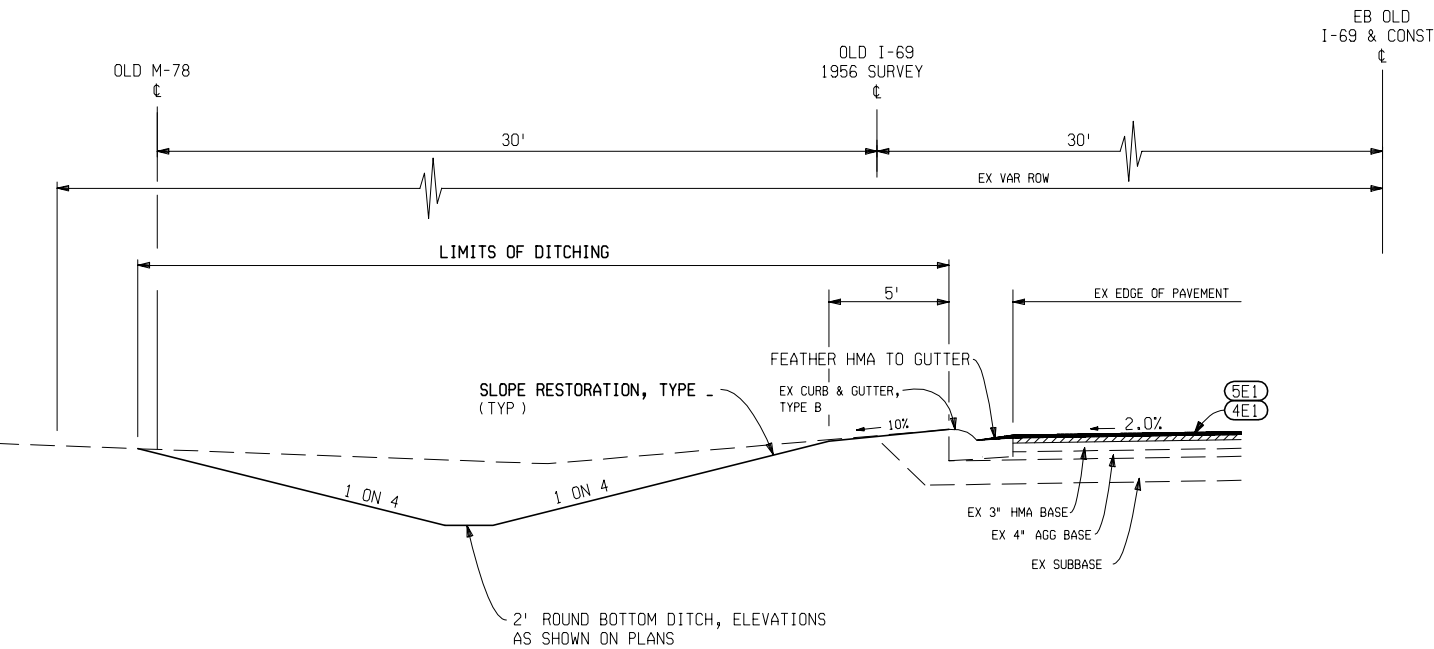
BUTT JOINT DETAIL

TO APPLY: STA 726+25 (POB)
STA 107+72 (POE)



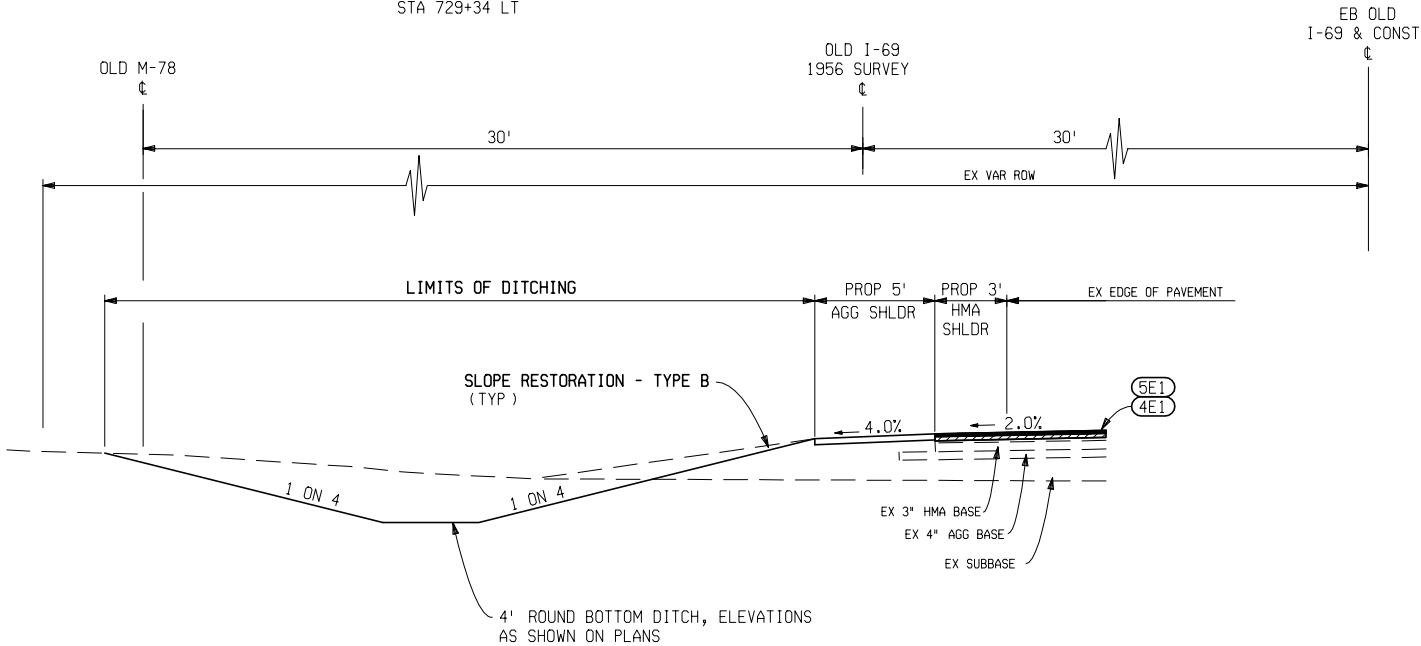
OVERLAY DETAIL CONC W/ C&G DRIVE

TO APPLY: STA 726+91 LT
STA 729+34 LT




PROPOSED OLD I-69 DITCH SECTION

TO APPLY: STA 726+25 (POB) TO STA 731+42 LT

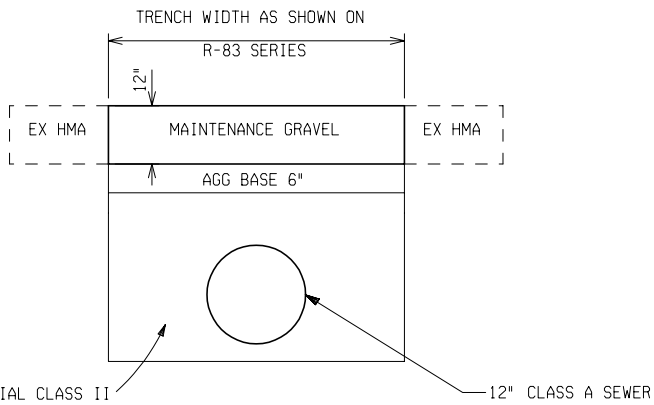
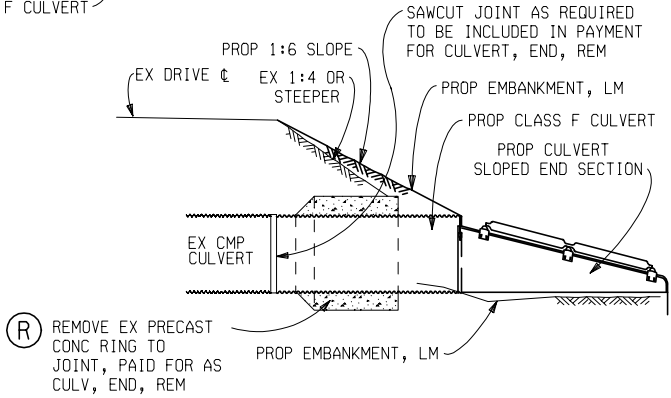
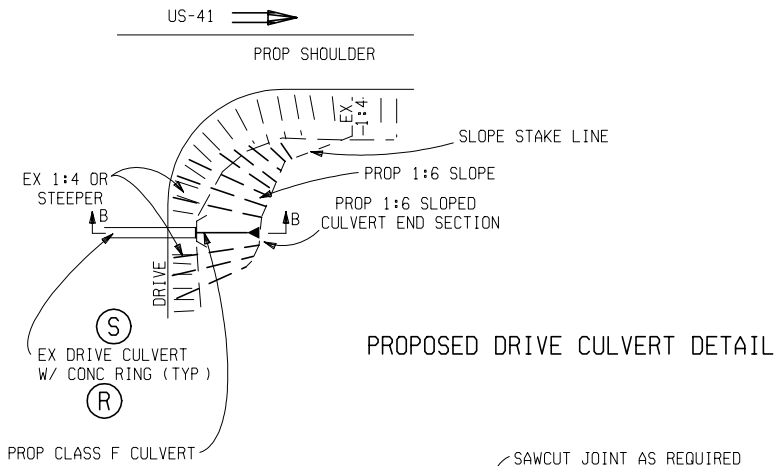


PROPOSED OLD I-69 DITCH SECTION

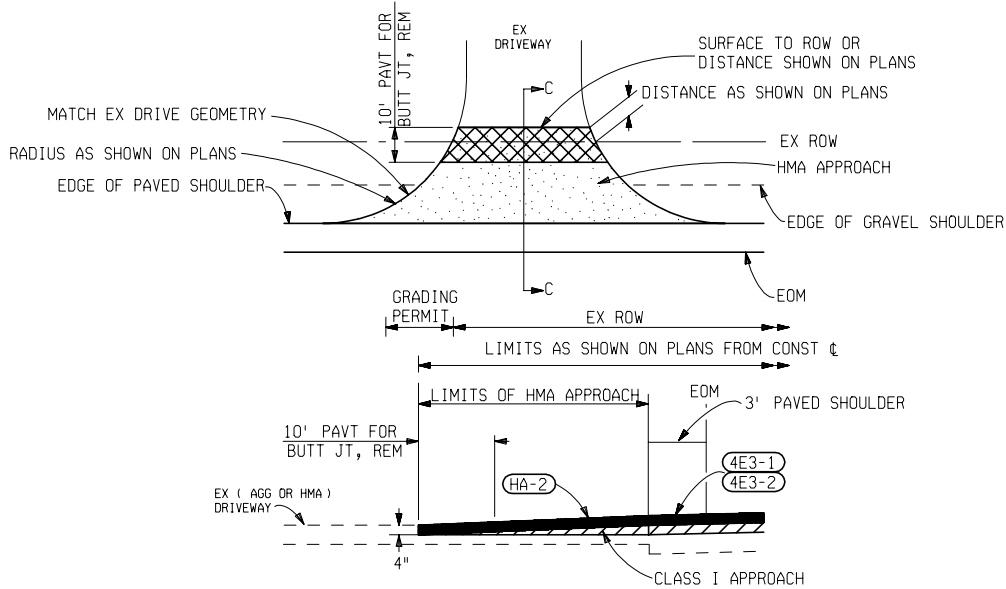
TO APPLY: STA 731+42 TO STA 757+25 LT

	MISC DETAILS					
DATE	SCALE	CONT. SEC.	JOB NO.	DESIGN UNIT	SHEET NO.	
	NTS				R.O.W.	CONST.

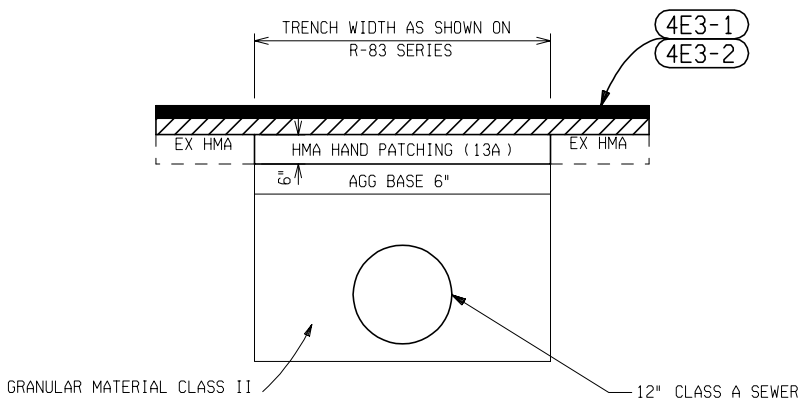
FINAL R.O.W.			
AUTH	DATE	NO.	REVISION



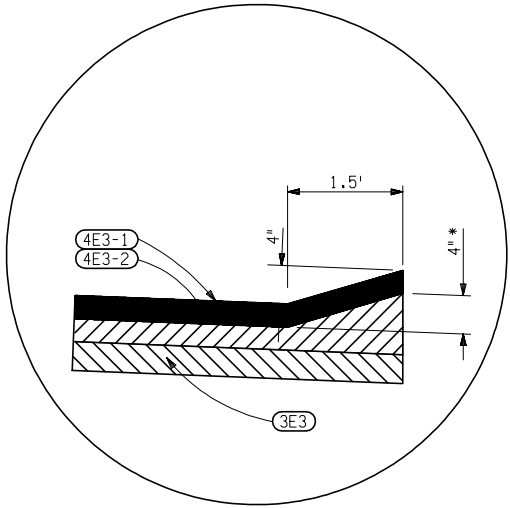
TEMPORARY SEWER CROSS LEAD PAVEMENT REPAIR DETAIL
TO APPLY:
STA 18+72.00 RT (RIVES JUNCTION RD)



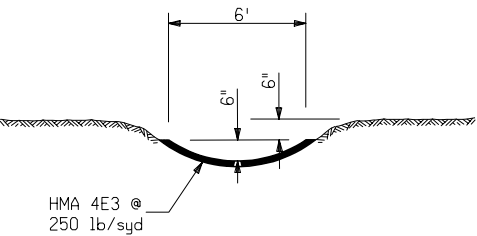
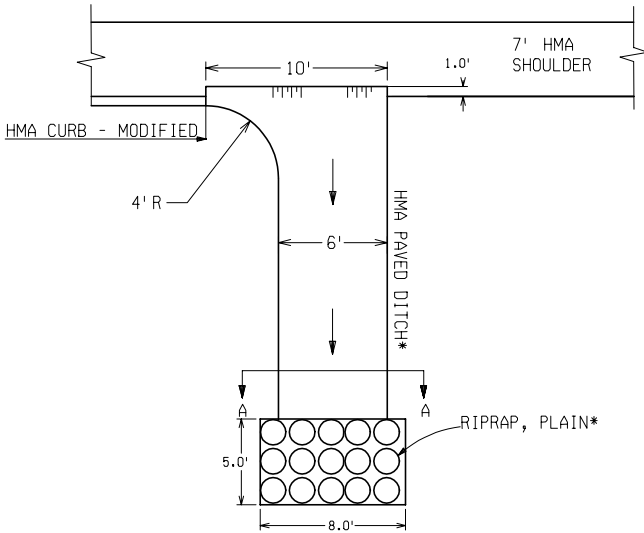
HMA DRIVEWAY DETAIL
TO APPLY:
STA 7+80.79 LT
STA 8+33.77 RT
STA 9+33.57 LT
STA 10+78.22 LT
STA 11+89.77 LT
STA 16+23.03 RT (RIVES JUNCTION RD)



SEWER CROSS LEAD PAVEMENT REPAIR DETAIL
TO APPLY:
STA 18+72.00 RT (RIVES JUNCTION RD)



HMA CURB - MODIFIED
TO APPLY:
STA 17+29.23 TO STA 25+40.62
*CONFIGURATION OF HMA CURB IN
LEVELING COURSE MAY BE ADJUSTED
AS APPROVED BY THE ENGINEER



HMA SPILLWAY
(PAID FOR AS PAVED DITCH, HMA)
TO APPLY:
STA 17+29.23 Lt
STA 25+40.62 Lt

NOTE:
*PLACE SPILLWAY AND RIPRAP BEFORE PAVING SHOULDER

	MISCELLANEOUS DETAILS				
	DATE	SCALE NONE	CONT. SEC.	JOB NO.	DESIGN UNIT
					SHEET NO. R.O.W CONST.

63

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 30 31 32 33

GUARDRAIL LAYOUT DETAIL 1

DIRECTION	HAZARD STA	STA A	STA B	STA C	STA D	Y1	Y2	Y3	Y4	X
LEFT	337+31.24	336+62.49	336+87.49	337+74.99	338+12.49	13.79'	12.00'	12.00'	14.68'	14
RIGHT	337+65.26	338+09.01	338+09.01	337+21.51	336+84.01	12.00'	12.00'	12.00'	14.68'	14
LEFT	359+95.56	358+89.31	359+51.81	360+39.31	361+26.81	16.46'	12.00'	12.00'	18.25'	14
RIGHT	391+54.52	391+98.17	391+85.67	391+10.67	391+10.67	12.00'	12.00'	12.00'	12.89'	14
LEFT	391+82.77	391+26.52	391+39.02	392+26.52	392+51.52	12.89'	12.00'	12.00'	13.79'	14
RIGHT	480+53.42	480+97.17	480+97.17	480+09.67	479+97.17	12.00'	12.00'	12.00'	12.89'	14
LEFT	530+38.25	529+94.50	529+94.50	530+82.00	530+94.50	12.00'	12.00'	12.00'	12.89'	14
RIGHT	530+88.87	531+32.62	531+32.62	530+45.12	530+45.12	12.00'	12.00'	12.00'	12.00'	14
*LEFT	554+72.96	554+10.46	554+47.96	554+97.96	555+35.46	13.79'	12.00'	12.00'	14.68'	14
*RIGHT	585+22.27	585+72.27	585+47.27	584+97.27	584+47.27	13.79'	12.00'	12.00'	15.57'	14
*LEFT	585+22.27	584+97.27	584+97.27	585+47.27	585+47.27	12.00'	12.00'	12.00'	12.00'	14
*LEFT	610+82.04	610+44.54	610+57.04	611+07.04	611+32.04	12.89'	12.00'	12.00'	13.79'	14
*RIGHT	611+08.12	612+08.12	611+33.12	610+83.12	610+33.12	17.36'	12.00'	12.00'	15.57'	14
LEFT	636+86.73	636+42.98	636+42.98	637+30.48	637+67.98	3.50'	3.50'	3.50'	6.10'	11
RIGHT	636+89.60	636+14.60	636+52.10	636+89.60	636+89.60	6.89'	3.60'	3.60'	3.60'	11
RIGHT	658+31.42	659+00.17	658+75.17	657+87.67	657+25.17	5.87'	3.50'	3.50'	5.08'	11
LEFT	658+70.29	658+14.04	658+26.54	659+14.04	659+89.04	4.72'	3.50'	3.50'	10.31'	11

*DOES NOT APPLY

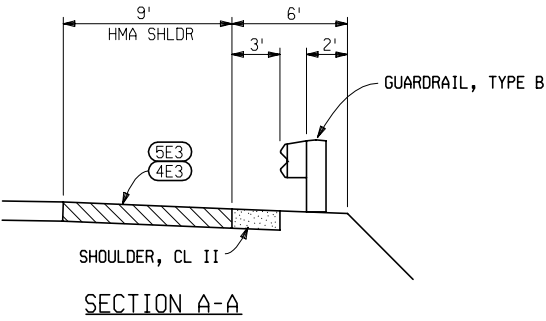
GUARDRAIL LAYOUT DETAIL 2

DIRECTION	HAZARD STA	STA A	STA B	STA C	Y1	Y2	Y3	R	X	CURVED RAIL LENGTH
RIGHT	359+95.56	361+01.81	360+39.31	359+76.81	16.46'	12.00'	12.00'	25.00'	14	37.5'
**LEFT	480+53.42	480+03.42	480+28.42	480+53.42	17.29'	15.50'	15.50'	12.50'	14	25.0'

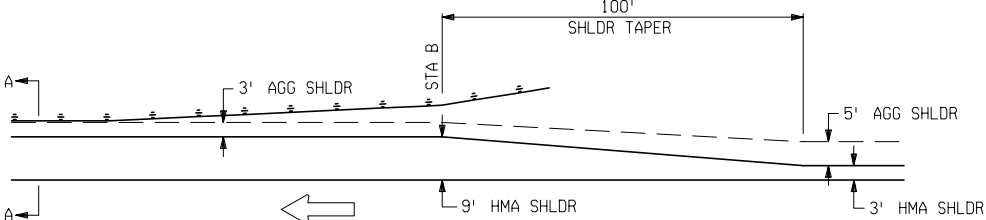
**DOES NOT APPLY

GUARDRAIL LAYOUT DETAIL 3 & 4

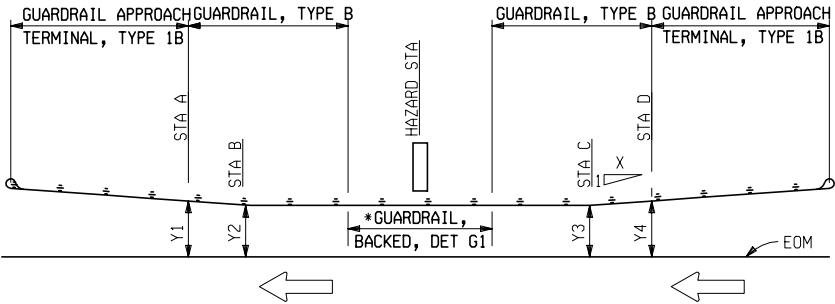
DIRECTION	STA A	STA B	STA C	STA D	STA E	Y1	Y2	Y3	Y4	Y5	R	X	CURVED RAIL LENGTH	TERMINAL
RIGHT		539+34.72	539+34.72	539+09.72	539+09.72									
LEFT	539+35.00					6.90'	13.80'	13.80'	13.80'	13.80'	25.00		37.5'	APPROACH
RIGHT	540+40.98					12.60'					10.00		12.5'	DEPARTING
LEFT		540+41.53	540+41.53	540+66.53	540+66.53		8.50'	8.50'	8.50'	8.50'				
RIGHT		727+69.56	727+32.06	727+32.06	726+82.06		9.40'	9.40'	9.40'	13.98'		11		
LEFT		728+57.44	728+57.44	728+82.44	728+82.44		10.30'	10.30'	10.30'	10.30'				



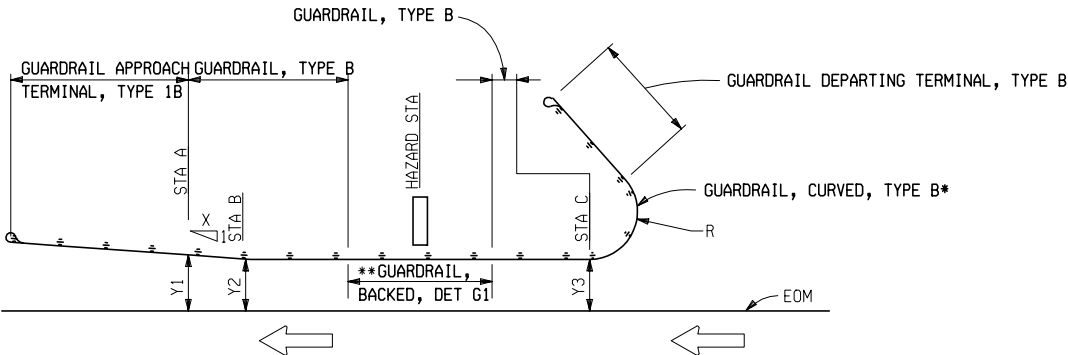
SECTION A-A



TYPICAL GUARDRAIL DETAIL

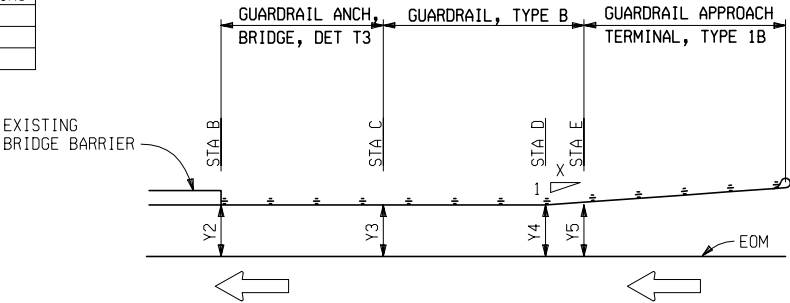


GUARDRAIL LAYOUT DETAIL 1

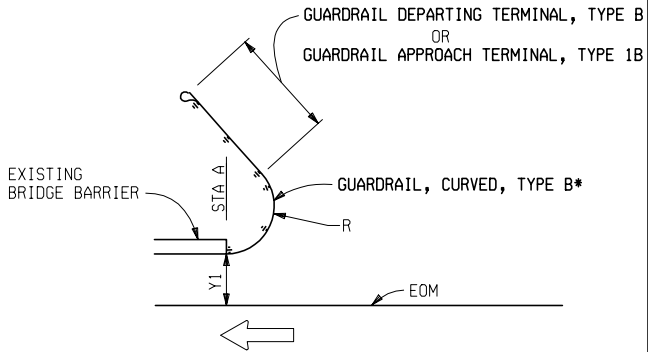


GUARDRAIL LAYOUT DETAIL 2

*LAYOUT AND CRT POSTS AS PER SPECIAL DETAIL 21



GUARDRAIL LAYOUT DETAIL 3



GUARDRAIL LAYOUT DETAIL 4

*LAYOUT AND CRT POSTS AS PER SPECIAL DETAIL 21

CONSTRUCTION SHEET

5-5

	GUARDRAIL LAYOUT SHEET					SHEET NO.	
	DATE	SCALE	CONT. SEC.	JOB NO.	DESIGN UNIT	R.O.W CONST.	
		NONE				521	21

DATE: \$DATE\$

WORKED ON BY:

DATE:

CHECKED BY:

FILE NAME: \$FILE\$

GENERAL DESIGN GUIDELINES

- 1

SHOW ONLY THE APPLICABLE GENERAL PLAN NOTES. GENERATE FROM NEW LIST EACH TIME A NOTE SHEET IS CREATED. [HTTP://MDOTWAS1.MDOT.STATE.MI.US/PUBLIC/BBS/INDEX.CFM](http://MDOTWAS1.MDOT.STATE.MI.US/PUBLIC/BBS/INDEX.CFM) ***
- 2

USE ONE OF THE APPLICABLE STANDARD UTILITY NOTES IN THIS AREA.
- 3

ADDITIONAL SPACE AVAILABLE HERE FOR ADDITIONAL GENERAL PLAN NOTES.
- 4

ADDITIONAL SPACE AVAILABLE HERE FOR ADDITIONAL MISCELLANEOUS ESTIMATES.
- 5

SHOW COLUMN FOR PAY ITEMS/QUANTITIES FOR EACH JOB NUMBER AND FOR ACT 51 PARTICIPATING CITIES. IDENTIFY ALL THE VARIOUS CATEGORIES USED FOR THE PROJECT FOR MULTIPLE CATEGORIES. BREAKOUT QUANTITIES ON PLAN AND PROFILE SHEET FOR MULTIPLE CATEGORIES
- 6

COMPLETE ANY APPLICABLE PROJECT INFORMATION.
- 7

USE LATEST STANDARD PLANS FOR WORK IN THE PROJECT. ATTACH A COPY OF ALL SPECIAL DETAILS AT THE END OF THE SET OF PLANS.
[HTTP://MDOTWAS1.MDOT.STATE.MI.US/PUBLIC/DESIGN/ENGLISHSTANDARDPLANS/INDEX.HTM](http://MDOTWAS1.MDOT.STATE.MI.US/PUBLIC/DESIGN/ENGLISHSTANDARDPLANS/INDEX.HTM)
- 8

USE LATEST TRAFFIC AND SAFETY STANDARD PLANS, ATTACH A COPY OF ALL SPECIAL DETAILS FOR SIGNS. THE SIGNING NOTES GO IN FRONT OF THE SIGNING PLAN PACKAGE WITH THE REMAINING SIGNING SPECIAL DETAILS FOLLOWING THE SIGNING PLANS. [HTTP://WWW.MDOT.STATE.MI.US/TANDS/PLANS.CFM](http://www.mdot.state.mi.us/TANDS/PLANS.CFM)

*** THE NOTES USED TO PREPARE A NOTE SHEET CAN BE FOUND UNDER CAD_ENG UNDER RD_NOTES.DAT

ENGINEERING REPORT NO	N/A	ENVIRON IMPACT STMT	N/A
METHOD OF SURVEY	N/A		YEAR
SURVEY ORDER	N/A	SURVEY CHIEF	N/A
AERIAL SURVEY NO	N/A		YEAR
HORIZ DATUM	N/A	VERT DATUM	N/A
ROAD DESIGN INITIATED	D. Bradley	COMPLETED	D. Bradley
PREL. BRIDGE PLANS BY	G. Feuerstein	FINAL PLANS BY	D. Bradley / G. Feuerstein
FIELD INSPECTION (GI) BY	D. Johnson, D. Bradley, A. Maki		DATE 5-11-04
FHWA AREA ENGINEER	Ron Hatcher		

GENERAL PLAN NOTES

UNDERGROUND UTILITIES

FOR PROTECTION OF UNDERGROUND UTILITIES AND IN CONFORMANCE WITH PUBLIC ACT 53, 1974, THE CONTRACTOR SHALL DIAL 1-800-482-7171 A MINIMUM OF THREE FULL WORKING DAYS, EXCLUDING SATURDAYS, SUNDAYS, AND HOLIDAYS PRIOR TO BEGINNING EACH EXCAVATION IN AREAS WHERE PUBLIC UTILITIES HAVE NOT BEEN PREVIOUSLY LOCATED. MEMBERS WILL THUS BE ROUTINELY NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF NOTIFYING UTILITY OWNERS WHO MAY NOT BE A PART OF THE "MISS DIG" ALERT SYSTEM.

STATIONING

STATIONING ON THIS PROJECT WAS TAKEN FROM OLD PLANS AND PAVEMENT STENCILED STATIONING AND IS NOT NECESSARILY ACCURATE.

RECREATIONAL PROPERTIES

THE CONTRACTOR SHALL NOT PARK ANY VEHICLES OR STORE ANY EQUIPMENT ON ANY PUBLIC RECREATIONAL PROPERTY. ACCESS TO THE RECREATIONAL SITE MUST BE MAINTAINED AT ALL TIMES.

PAVEMENT REMOVAL QUANTITIES

PAVEMENT REMOVAL AS SHOWN ON THE PLANS WILL BE AT THE DISCRETION OF THE ENGINEER. IF IN HIS/HER JUDGEMENT, AREAS OF PAVEMENT MAY BE LEFT IN PLACE, OR ADDITIONAL AREAS ADDED TO PROVIDE THE PROPER CROSS-SECTION AND BASE, CHANGES CAN BE MADE IN THE QUANTITIES.

GUARDRAIL

GUARDRAIL SHALL BE EXTENDED PARALLEL TO EXISTING BRIDGE RAILING UNTIL PAST DOWNSPOUTS BEFORE FLARING TO SHOULDER.

PERMANENT SIGNS

ANY PERMANENT SIGNS REQUIRING RELOCATION DUE TO CONTRACTOR OPERATIONS SHALL BE SALVAGED AND RESET BY THE CONTRACTOR AT LOCATIONS DESIGNATED BY THE ENGINEER. THE COST OF THIS WORK SHALL BE BORNE BY THE CONTRACTOR.

BRIDGE APPROACH SLABS

THE CONCRETE APPROACH SLAB TO BRIDGES SHALL BE THICKENED TO MATCH THE EXISTING BRIDGE SEAT. THE ADDITIONAL STEEL REINFORCEMENT AND ADDITIONAL THICKNESS OF CONCRETE AS PER STANDARD PLAN R-45 SERIES IS INCLUDED IN THE APPROACH SLAB CONCRETE PAVEMENT PAY ITEM.

PAVEMENT MARKINGS AND SIGNS

ALL PERMANENT PAVEMENT MARKINGS, SHAPES, AND DIMENSIONS SHALL CONFORM WITH MDOT PAVEMENT MARKING TYPICALS VIII-900 THRU 990 SERIES UNLESS SPECIFIED BY SPECIAL PROVISION. ALL EDGE LINES SHALL BE 6 INCHES AND ALL GORE MARKINGS SHALL BE 12 INCHES. OFFSETS FROM CONSTRUCTION JOINTS SHALL REMAIN AS NOTED IN THE PAVEMENT MARKING TYPICALS. ALL PERMANENT SIGNS SHALL CONFORM WITH MDOT SIGNING TYPICAL PLANS VIII-100 THRU 830 SERIES UNLESS SPECIFIED BY SPECIAL PROVISION.

UTILITIES

THE EXISTING UTILITIES LISTED BELOW AND SHOWN ON THESE PLANS REPRESENT THE BEST INFORMATION AVAILABLE. INORMATION DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY TO BE SATISFIED AS TO ITS ACCURACY AND THE LOCATION OF EXISTING UTILITIES.

NAME OF OWNER

KIND OF UTILITY

SBC (AMERITECH)
ATTN: MARSHA BERTOLDI
211 EAST B STREET
IRON MOUNTAIN, MI 49801
(906) 779-2744

TELEPHONE

WE ENERGIES
ATTN: NOEL ANDERSON
800 INDUSTRIAL PARK DRIVE
IRON MOUNTAIN, MI 49801
(906) 779-2498

ELECTRIC

3

NOTES APPLYING TO ROAD & BRIDGE STANDARD PLANS

WHERE THE FOLLOWING ITEMS ARE CALLED FOR ON PLANS, THEY ARE TO BE CONSTRUCTED ACCORDING TO THE STANDARD PLAN GIVEN BELOW OPPOSITE EACH ITEM UNLESS OTHERWISE INDICATED.

APPROACH CURB & GUTTER, DOWNSPOUTS (FOR BRIDGE APPROACH CURB AND GUTTER)	R-32-D (SPEC. DET)
TRANSVERSE PAVEMENT JOINTS	R-39-G (SPEC. DET)
LONGITUDINAL PAVEMENT JOINTS	R-41-D
LOCATION OF TRANSVERSE JOINTS IN CONCRETE PAVEMENT	R-43-D (SPEC. DET)
CONVENTIONAL PAVEMENT REINFORCEMENT	R-45-E
TEMPORARY CONCRETE BARRIER	R-52-D
GUARDRAIL AT BRIDGES AND EMBANKMENTS	R-59-E
GUARDRAIL TYPES A, B, BD, T & TD	R-60-F
GUARDRAIL ANCHORAGE, BRIDGE, DETAILS	R-67-E
SOIL EROSION & SEDIMENTATION CONTROL MEASURES	R-96-C
TEMPORARY TRAFFIC CONTROL DEVICES	R-125-C
PLACEMENT OF TEMPORARY CONCRETE BARRIER	R-126-C (SPEC. DET)
BRIDGE RAILING, AESTHETIC PARAPET TUBE	B-25-C
MOLDING, BEVEL, LIGHT STANDARD ANCHOR BOLT ASSEMBLY AND NAME PLATE DETAILS	B-103-D
CATEGORY 0001 REG PART = FED, STATE, CITY CATEGORY 0003 MARQUETTE PART = 100% MARQUETTE CATEGORY 0005 NON CITY = FED, STATE	5

8

NOTES APPLYING TO TRAFFIC & SAFETY STANDARD PLANS

WHERE THE FOLLOWING ITEMS ARE CALLED FOR ON PLANS, THEY ARE TO BE CONSTRUCTED ACCORDING TO THE STANDARD PLAN GIVEN BELOW OPPOSITE EACH ITEM UNLESS OTHERWISE INDICATED.

GENERAL NOTES	SPEC. DET
STANDARD SIGN INSTALLATIONS	SIGN-100-A
STANDARD ROUTE MARKER INSTALLATIONS	SIGN-110-A
SIGN LOCATION CODES PLACEMENT	SIGN-115-A
ROADSIDE SIGN LOCATIONS & SUPPORT SPACING	SIGN-120-A
STEEL POSTS	SIGN-200-A
WOOD POSTS	SIGN-210-A
CATEGORY 0001 REG PART = FED, STATE, CITY CATEGORY 0003 MARQUETTE PART = 100% MARQUETTE CATEGORY 0005 NON CITY = FED, STATE	5

MISCELLANEOUS ESTIMATES

THE FOLLOWING ITEMS OF WORK SHALL BE DONE AS THEY APPLY THROUGHOUT THE PROJECT. THESE ITEMS ARE NOT DETAILED OR INCLUDED ON THE PLAN AND PROFILE SHEETS:

5

MAINTAINING TRAFFIC

JN 12345A NON CITY PART	JN 12345A MARQUETTE PART	JN 12345A REG PART	
		2 Ea	Lighted Arrow, Type C, Furn
		2 Ea	Lighted Arrow, Type C, Oper
		1 Ea	Lighted Arrow, Type C, Standby
		20 Ea	Plastic Drum, High Intensity, Lighted, Furn
		20 Ea	Plastic Drum, High Intensity, Lighted, Oper
		12 Sft	Sign, Type A, Temp, Furn
		12 Sft	Sign, Type A, Temp, Oper
		651 Sft	Sign, Type B, Temp, Furn
		651 Sft	Sign, Type B, Temp, Oper
		0.5 LS	Minor Traf Devices
	0.5	0.5 LS	Flag Control
		550 Ft	Conc Barrier, Temp, Furn
		550 Ft	Conc Barrier, Temp, Oper
		550 Ft	Conc Barrier, Temp, Adjusted
		20 Ea	Conc Barrier Reflector Replacement
		20 Ea	Sand Module Impact Attenuator (Temp)
		5 Ea	Sand Module Impact Attenuator (Replacement)
		2000 Ft	Pavt Mrkg, Type NR, Paint, 4 inch, White, Temp
		2000 Ft	Pavt Mrkg, Type NR, Paint, 4 inch, Yellow, Temp
		80 Ft	Pavt Mrkg, Type R, 4 inch, Yellow, Temp
		4000 Ft	Pavt Mrkg, Longit, 6 inch or Less Width, Rem
		24 Ft	Pavt Mrkg, Longit, Greater than 6 inch Width, Rem
		200 Ft	Guardrail Height, Adj

5

PERMANENT PAVEMENT MARKINGS

JN 12345A NON CITY PART	JN 12345A MARQUETTE PART	JN 12345A REG PART	
2000		Ft	Pavt Mrkg, Waterborne, 4 inch, Yellow
4000		Ft	Pavt Mrkg, Waterborne, 6 inch, White
2000		Ft	Pavt Mrkg, Waterborne, 2nd Application, 4 inch, Yellow
4000		Ft	Pavt Mrkg, Waterborne, 2nd Application, 6 inch, White

5

SLOPE RESTORATION AND EROSION CONTROL

JN 12345A NON CITY PART	JN 12345A MARQUETTE PART	JN 12345A REG PART	
		20 Cyd	Erosion Control, Maintenance, Sediment Removal
	250	250 Ft	Erosion Control, Silt Fence
		100 Syd	Topsoil Surface, Furn, 4 inch
		100 Syd	Mulch Blanket
	5	5 Lb	Seeding, Mixture THV
	5	5 Lb	Fertilizer, Chemical Nutrient, CI A

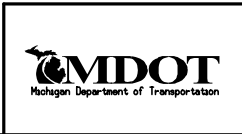
5

PERMANENT SIGNING

JN 12345A NON CITY PART	JN 12345A MARQUETTE PART	JN 12345A REG PART	
		108 Ft	Post, Steel, 3 lb
		400 Sft	Sign, Type IIA
		200 Sft	Sign, Type IIB
		3 Ea	Sign, Type I, Erect, Salv
		48 Ft	Post, Wood, 4 inch by 6 inch
		3 Ea	Sign, Type I, Rem
		18 Ea	Sign, Type II, Rem

4

6-1

	NOTE SHEET				
	DATE 07-29-04	CONT. SEC.	JOB NO.	DESIGN UNIT	SHEET NO. R.O.W CONST.

GENERAL DESIGN GUIDELINES

- 1 UNIT LEADER MAY DETERMINE TO PLACE REMOVAL LEGEND BOX ON PLANS AS DEEMED NECESSARY.
- 2 UPDATE FOR SPECIAL SYMBOLS PERTAINING TO THE PROJECT.
- 3 THIS SHEET CHANGES PERIODICALLY. MAKE SURE SYMBOLS ON THIS SHEET MATCH THE SURVEY AND THE DESIGN.
- 4 USE PROPER LINE CODES ON PLANS TO MATCH LINE CODES ON LEGEND SHEET FOR UTILITIES, ROW AND TOPO PATTERNS.

LEGEND SHEET

DATE:

WORKED ON BY:

DATE:

WORKED ON BY:

DATE:

CHECKED BY:

FILE NAME:

3

EXISTING SANITARY CATCH BASIN

EXISTING SANITARY CATCH BASIN LEFT

EXISTING STORM CATCH BASIN

EXISTING STORM CATCH BASIN LEFT

PROPOSED SANITARY CATCH BASIN

PROPOSED SANITARY CATCH BASIN LEFT

PROPOSED STORM CATCH BASIN

PROPOSED STORM CATCH BASIN LEFT

SA SANITARY SEWER MANHOLE

SA PROPOSED SANITARY SEWER MANHOLE

ST STORM SEWER MANHOLE

ST PROPOSED STORM SEWER MANHOLE

U EXISTING MANHOLE - UNIVERSAL

U PROPOSED MANHOLE - UNIVERSAL

< EXISTING CULVERT END SECTION

◄ PROPOSED CULVERT END SECTION

[EXISTING HEADWALL

[PROPOSED HEADWALL

⊖ WATER SHUT OFF

[W] WATER GATE VALVE

● WATER GATE WELL

⊙ WATER METER

W WATER MANHOLE

⊗ WATER WELL

ⓔ EXISTING FIRE HYDRANT

ⓕ PROPOSED FIRE HYDRANT

⊙ RIVER BOTTOM

ADJ-HYD ADJUST FIRE HYDRANT

ADJ ADJUST DRAINAGE STRUCTURE

ADJ- ADJUST DRAINAGE STRUCTURE W/COVER

ADJ-B/O ADJUST DRAINAGE STRUCTURE BY OTHERS

REL-B/O RELOCATE - BY OTHERS

SR- SIDEWALK RAMP TYPE

∧ CHECK DAM (PROFILES)

H.W.T. DIKE (PROFILES)

⋈ WATER TABLE (PROFILES)

3

HAZARDOUS OR FLAMMABLE MATERIAL

CAUTION - CRITICAL UNDERGROUND UTILITY

PROPOSED CULVERT/SEWER

EXISTING CULVERT/SEWER

UTILITIES SYMBOLS

POWER POLE

GUY POLE

LIGHT POLE

LIGHT STANDARD

POWER AND LIGHT POLE

TELEPHONE POLE

TELEPHONE MANHOLE

TELEPHONE PEDESTAL

WALK NO-WALK SIGN

GAS LINE MARKER

GAS VALVE

GAS FILLER PIPE

GAS WELL

OIL WELL

PETROLEUM MARKER

FIBER OPTIC MARKER

ELECTRIC MANHOLE

ELECTRIC HANDHOLE

PHONE OR CALL BOX

MAIL BOX

DEADMAN FOR GUYWIRE

RAILROAD SWITCH BOX

FLASHING RAILROAD SIGN

POWER TOWER

MISCELLANEOUS SYMBOLS

PINE TREE

TREE

RIPRAP

SIGN

SIGN2

STUMP

SWAMP

VERTICAL CONTROL POINT

SECTION CORNER

16TH CORNER

QUARTER CORNER

HALF QUARTER CORNER

ROW MARKER

PROPERTY CORNER

REFERENCE POINT

REFERENCE MARKER

T.H.# TEST HOLE NO.

BEAM G. R. RUN NUMBER (EXISTING)

BEAM G. R. RUN NUMBER (PROPOSED)

USED WITH UNDERGROUND GAS & ELECTRICAL LINES

USED WITH UNDERGROUND TELEPHONE & FIBER OPTICS LINES

4

UTILITY PATTERNS

ELEC ELECTRICAL LINE

24" GAS GAS LINE

12" OIL OIL LINE

TELE TELEPHONE LINE

36" WM WATER LINE

CTV CABLE TV

TELE FO FIBER OPTICS

POWER TRANSMISSION LINE

4

R.O.W. PATTERNS

EX. LIMITED ACCESS R.O.W.

EXISTING R.O.W.

PROP LIMITED ACCESS R.O.W.

PROP FREE ACCESS R.O.W.

SECTION LINE

4

TOPO PATTERNS

HEDGE LINE

TREE LINE

EXISTING FENCE

PROPOSED FENCE

EXISTING GUARD RAIL

PROPOSED GUARD RAIL

EXISTING DRAINAGE CRS

EDGE OF WATER

PROPOSED DRAINAGE CRS

EDGE OF WATER

WETLANDS AREA

CITY LIMITS

RAILROAD

SOUND ABATEMENT WALL

CONCRETE MEDIAN BARRIER

SLOPE STAKE LINE

FINAL R.O.W.

REVISION

PLAN SHEET DRIVE/APPROACH LEGEND

CONCRETE

HMA

AGGREGATE

PLAN SHEET REMOVAL LEGEND

REMOVING HMA

REMOVING SIDEWALK

REMOVING PAVEMENT

COLD-MILLING HMA

HMA BASE CRUSH & SHAPE

REMOVING CURB, GUTTER AND CURB & GUTTER

REMOVING

ABANDONING

SAVE

BULKHEAD

CLEARING

TYPICAL CROSS SECTION LEGEND

REMOVAL OF PAVEMENT, CURB & GUTTER, SIDEWALK AND COLD MILLING

CRUSH & SHAPE & RUBBLIZE

HMA TOP COURSE & WEDGING

HMA LEVELING COURSE

HMA BASE COURSE

AGGREGATE, SUBBASE, SIDEWALK, CURB & GUTTER, BARRIER AND VALLEY GUTTER

CONCRETE PAVEMENT & SHOULDERS

SPECIAL LEGEND THIS PROJECT

POTENTIAL CONTAMINATED SITE

1

2

MDOT

Michigan Department of Transportation

DATE

SCALE

CONT. SEC.

JOB NO.

DESIGN UNIT

SHEET NO.

R.O.W

CONST.

1"=

7-1

FILE NAME:

WORKED ON BY:

DATE:

DATE:

TABLE OF CONTENTS

8-1) PLOT LOCATION OF BENCHMARKS AND CONTROL POINTS ON THE PLANS AS

⊗ B.M.#

⊗ C.P.#

BENCHMARKS AND WITNESSES

1 2 3

BENCHMARKS

B.M.*12 ELEV. 992.34'
DESCRIPTION: SET A RR SPIKE IN THE NORTH SIDE OF A POWER POLE IN FRONT OF HOUSE #5040 ON THE SOUTH SIDE OF M-50 AND JUST WEST OF MURRAY ROAD. THIS BENCH IS NOT WITHIN THE PROJECT LIMITS.

B.M.*20 ELEV. 993.64'
STA 262+16 OFFSET= 34 ' RT
DESCRIPTION: SET RR SPIKE IN THE SOUTH SIDE OF A POWER POLE ON THE NORTH SIDE OF M-50, 220' EAST OF THE INTERSECTION OF M-50 AND RIVES JUNCTION ROAD.

B.M.*21 ELEV. 1004.49'
STA 267+43 OFFSET= 49' LT
DESCRIPTION: SET RR SPIKE IN THE NORTH SIDE OF A POWER POLE ON THE SOUTH SIDE OF M-50 316' WEST OF THE INTERSECTION OF M-50 AND RIVES JUNCTION ROAD.

B.M.*22 ELEV. 997.42
STA 278+08 OFFSET= 49 ' LT
DESCRIPTION: SET RR SPIKE IN THE NORTH SIDE OF A POWER POLE IN THE SW QUADRANT OF THE INTERSECTION WITH M-50 AND BLACK OAK TRAIL.

CONTROL POINT WITNESSES

NOTE: HORIZONTAL DATUM IS BASED ON NAD 1983(1994) MICHIGAN SOUTH AND ALL DIMENSIONS ARE IN INTERNATIONAL FEET. VERTICAL DATUM IS BASED ON NAVD 88.

CONTROL PT# 5
DESCRIPTION: FOUND MDOT CAPPED REBAR IN THE SE QUADRANT OF THE INTERSECTION OF RIVES JUNCTION AND M-50. CP5 WAS SET DURING A GPS STATIC CONTROL SESSION FOR JOB 53256 & 58886 IN JUNE 2002. THE ELEVATION FOR THIS POINT IS FROM THE VERTICAL LEVEL LOOP PERFORMED FOR JOB #76033C.
WEST 30' CENTERLINE OF RIVES JUNCTION ROAD
NORTH 75' CENTERLINE OF M-50.
N 05 E 21.62' TO THE EAST EDGE OF THE EAST LEG OF A STOP SIGN.
N 77 W 9.2' TO THE SOUTHERLY BACK OF CURB ON THE EAST SIDE OF RIVES JUNCTION ROAD, SOUTH OF M-50.

STA. 263+83, 70' LT
X= 13097392.121, Y= 299523.192 ELEV= 996.45'

CONTROL PT# 6
DESCRIPTION: FOUND MDOT CAPPED REBAR IN THE NW QUADRANT OF THE INTERSECTION OF RIVES JUNCTION AND VAN HORN ROAD. CP6 WAS SET DURING A GPS STATIC CONTROL SESSION FOR JOB 53256 & 58886 IN JUNE 2002.
S 70 W 21.82' FOUND NAIL AND TAG IN THE NORTH SIDE OF A POWER POLE.
N 10 W 70.84' SET MAG NAIL AND MDOT TAG IN THE SW SIDE OF A POWER POLE.
S 37 E 51.68' TO THE QUARTER SECTION CORNER COMMON TO SECTIONS 5 & 6, T2S, R1W, BLACKMAN TOWNSHIP, JACKSON COUNTY.

STA. 277 +16, 1745' RT
X= 13097320.543, Y= 301617.520 ELEV= 1003.63'

DATA# 40
DESCRIPTION: SET 1/4" MDOT CAPPED REBAR 39.4' SOUTH OF THE CENTERLINE OF M-50 AND ABOUT 300' WEST OF THE INTERSECTION OF M-50 AND RIVES JUNCTION ROAD.
S 80 W 20.45' TO BM 21, RR SPIKE SET IN NE SIDE OF A POWER POLE.
S 70 E 76.11' TO THE SOUTHERLY EDGE OF THE SOUTHERLY LEG OF A CURVE SIGN.

STA. 267 +28, 36' LT
X= 13097065.214, Y= 299652.083 ELEV= 1002.45'

DATA# 42
DESCRIPTION: SET 1/4" MDOT CAPPED REBAR 37' NORTH OF THE CENTERLINE OF M-50 AND ABOUT 540' WEST OF THE INTERSECTION OF M-50 AND RIVES JUNCTION ROAD.
S 75 W 23.63' SET PK NAIL AND MDOT TAG IN THE NORTH SIDE OF A POWER POLE.
N 34 W 82.73' TO THE SE CORNER OF A GARAGE.

STA. 269 +79, 37' RT
X= 13096869.898, Y= 299825.682 ELEV= 1007.08'

DATA# 44
DESCRIPTION: SET 1/4" CAPPED REBAR 28' SOUTH OF THE CENTER LINE OF M-50 AND ABOUT 445' EAST OF THE INTERSECTION OF M-50 AND BLACK OAK TRAIL.
S 75 W 10.30' SET DUPLEX NAIL AND MDOT TAG IN THE WEST SIDE OF AN 18" ELM.
S 50 W 26.50' TO THE NW CORNER OF A CHAINLINK FENCE.
N 40 W 82.92' TO THE SOUTH EDGE OF THE SOUTHERLY LEG OF RIVES JUNCTION ROAD SIGN.

STA. 273 +33, 28' LT
X= 13096546.679, Y= 299976.277 ELEV= 1004.11'

DATA# 46
DESCRIPTION: SET MAG NAIL AND MDOT TAG IN THE EASTERLY CUL-DE SAC OF MOUNTIE WAY IN NORTH VALLEY FARM SUBDIVISION.
S 75 W 45.4' TO THE CENTERLINE JOINT OF A CONCRETE DRIVEWAY, HOUSE #6208, WHERE IT MEETS THE BIT ROAD.
N 55 E 42.1' TO THE CENTERLINE JOINT OF A CONCRETE DRIVEWAY, HOUSE #6205, WHERE IT MEETS THE BIT ROAD.

STA. 272 +31, 249' RT
X= 13096795.496, Y= 300134.436 ELEV= 1002.13' (GPS)

DATA# 48
DESCRIPTION: SET MAG NAIL AND MDOT TAG IN THE SOUTH EDGE OF BIT AT THE SW QUADRANT OF THE INTERSECTION OF NORTH VALLEY FARM ROAD AND MOUNTIE WAY IN THE NORTH VALLEY FARM SUBDIVISION.
S 35 W 32.9' TO THE CENTER OF A CATCH BASIN.
S 35 E 49.6' TO THE CENTER OF A STORM MANHOLE.

STA. 277+86, 284' RT
X= 13096376.940, Y= 300500.026 ELEV= 993.35' (GPS)

DATA# 49
DESCRIPTION: SET MAG NAIL AND MDOT TAG IN THE WEST EDGE OF BIT OF NORTH VALLEY FARM ROAD AND 53' NORTH OF THE CENTERLINE OF M-50.
NW 2.7' TO THE BACK OF CURB.
S 80 W 6.8' TO THE E'LY LEG OF A "STOP" SIGN.

STA. 277 +89, 53' RT
X= 13096233.725, Y= 300318.054 ELEV= 997.57' (GPS)

DATA# 52
DESCRIPTION: SET CAPPED REBAR 21' NORTH OF THE CENTERLINE OF M-50 AND ABOUT 715' WEST OF THE CENTERLINE OF NORTH VALLEY FARM ROAD.
N 33 E 53.50' TO THE SW CORNER MONUMENT OF NORTH VALLEY FARM SUBDIVISION.
N 30 W 85.05' SET A DUPLEX NAIL AND MDOT TAG IN THE SOUTH SIDE OF A 28" WALNUT.

STA. 284 +73, 22' RT
X= 13095672.049, Y= 300709.655 ELEV= 1004.88'

KEBS CAPPED IRON 20+90 RT
X=13096830.6750
Y=299864.5370
(FOR RESETTING AFTER GRADING)

DATE: WORKED ON BY: DATE: CHECKED BY:

GENERAL DESIGN GUIDELINES

- 1 SHOW SECTION NUMBER, RANGE AND TOWNSHIP.
- 2 SHOW TIES TO CENTERLINE FROM GOVERMENT CORNERS / ALIGNMENT TIES AT CROSSROADS.
- 3 SHOW ALIGNMENT CURVE DATA ON SHEET WHERE P.I. APPEARS / ALONG WITH COORDINATES AT P.I., P.C. AND P.T. NOTE:



- 4 SHOW ALL BEARING & ANGLES TO THE NEAREST 1 SECOND
- 5 SHOW ALL TIES, DIMENSIONS & COORDINATES TO THE NEAREST HUNDREDTH

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EX I-196 RAMP C CL CURVE DATA

$\Delta=40^{\circ}39'53"$ (RT) D=5°1' 40" R=1,139.59' T=422.28' L=808.80' E=75.72' PC=14+72.41 X=12,578,282.76 Y=235,667.26 PI=18+94.69 X=12,578,605.01 Y=235,940.17 PT=22+81.21 X=12,579,027.28 Y=235,937.19 EX SUPER @ 7%	$\Delta=43^{\circ}47'43"$ (LT) D=4°58' 6" R=1,153.24' T=463.54' L=881.50' E=89.67' PC=25+63.56 X=12,579,309.62 Y=235,935.19 PI=30+27.10 X=12,579,773.14 Y=235,931.52 PT=34+45.06 X=12,580,110.27 Y=236,249.67 EX SUPER @ 7%	$\Delta=41^{\circ}59'24"$ (LT) R=1,426.33' D=4°1' 1" T=547.38' L=1,045.31' E=101.43' PC=34+57.04 X=12,580,118.98 Y=236,257.89 PI=40+04.42 X=12,580,517.08 Y=236,633.57 PCC=45+02.35 X=12,580,561.63 Y=237,179.13 EX SUPER @ 7%	$\Delta=2^{\circ}50'18"$ (LT) D=2°32' 30" R=2,254.34' T=55.85' L=111.68' E=0.69' PCC=45+02.35 X=12,580,561.63 Y=237,179.13 PI=45+58.20 X=12,580,566.18 Y=237,234.80 PT=46+14.03 X=12,580,567.96 Y=237,290.62 EX SUPER @ 7%
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EX I-196 RAMP B CL CURVE DATA

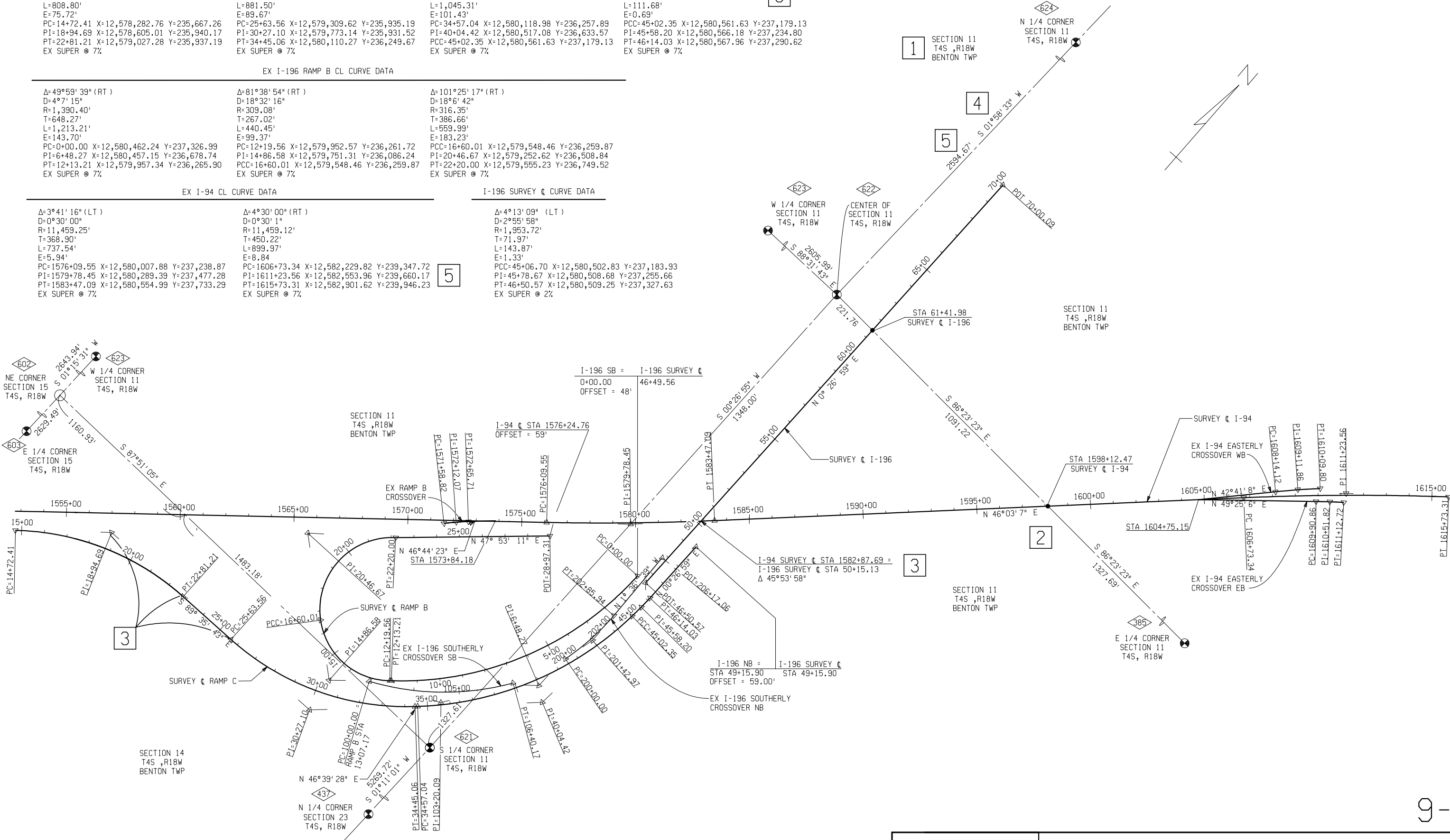
$\Delta=49^{\circ}59'39"$ (RT) D=4°7' 15" R=1,390.40' T=648.27' L=1,213.21' E=143.70' PC=0+00.00 X=12,580,462.24 Y=237,326.99 PI=6+48.27 X=12,580,457.15 Y=236,678.74 PT=12+13.21 X=12,579,957.34 Y=236,265.90 EX SUPER @ 7%	$\Delta=81^{\circ}38'54"$ (RT) D=18°32' 16" R=309.08' T=267.02' L=440.45' E=99.37' PC=12+19.56 X=12,579,952.57 Y=236,261.72 PI=14+86.58 X=12,579,751.31 Y=236,086.24 PCC=16+60.01 X=12,579,548.46 Y=236,259.87 EX SUPER @ 7%	$\Delta=101^{\circ}25'17"$ (RT) D=18°6' 42" R=316.35' T=386.66' L=559.99' E=183.23' PCC=16+60.01 X=12,579,548.46 Y=236,259.87 PI=20+46.67 X=12,579,252.62 Y=236,508.84 PT=22+20.00 X=12,579,555.23 Y=236,749.52 EX SUPER @ 7%
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EX I-94 CL CURVE DATA

$\Delta=3^{\circ}41'16"$ (LT) D=0°30' 00" R=11,459.25' T=368.90' L=737.54' E=5.94' PC=1576+09.55 X=12,580,007.88 Y=237,238.87 PI=1579+78.45 X=12,580,289.39 Y=237,477.28 PT=1583+47.09 X=12,580,554.99 Y=237,733.29 EX SUPER @ 7%	$\Delta=4^{\circ}30'00"$ (RT) D=0°30' 1" R=11,459.12' T=450.22' L=899.97' E=8.84' PC=1606+73.34 X=12,582,229.82 Y=239,347.72 PI=1611+23.56 X=12,582,553.96 Y=239,660.17 PT=1615+73.31 X=12,582,901.62 Y=239,946.23 EX SUPER @ 7%
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I-196 SURVEY CL CURVE DATA

$\Delta=4^{\circ}13'09"$ (LT) D=2°55' 58" R=1,953.72' T=71.97' L=143.87' E=1.33' PCC=45+06.70 X=12,580,502.83 Y=237,183.93 PI=45+78.67 X=12,580,508.68 Y=237,255.66 PT=46+50.57 X=12,580,509.25 Y=237,327.63 EX SUPER @ 2%
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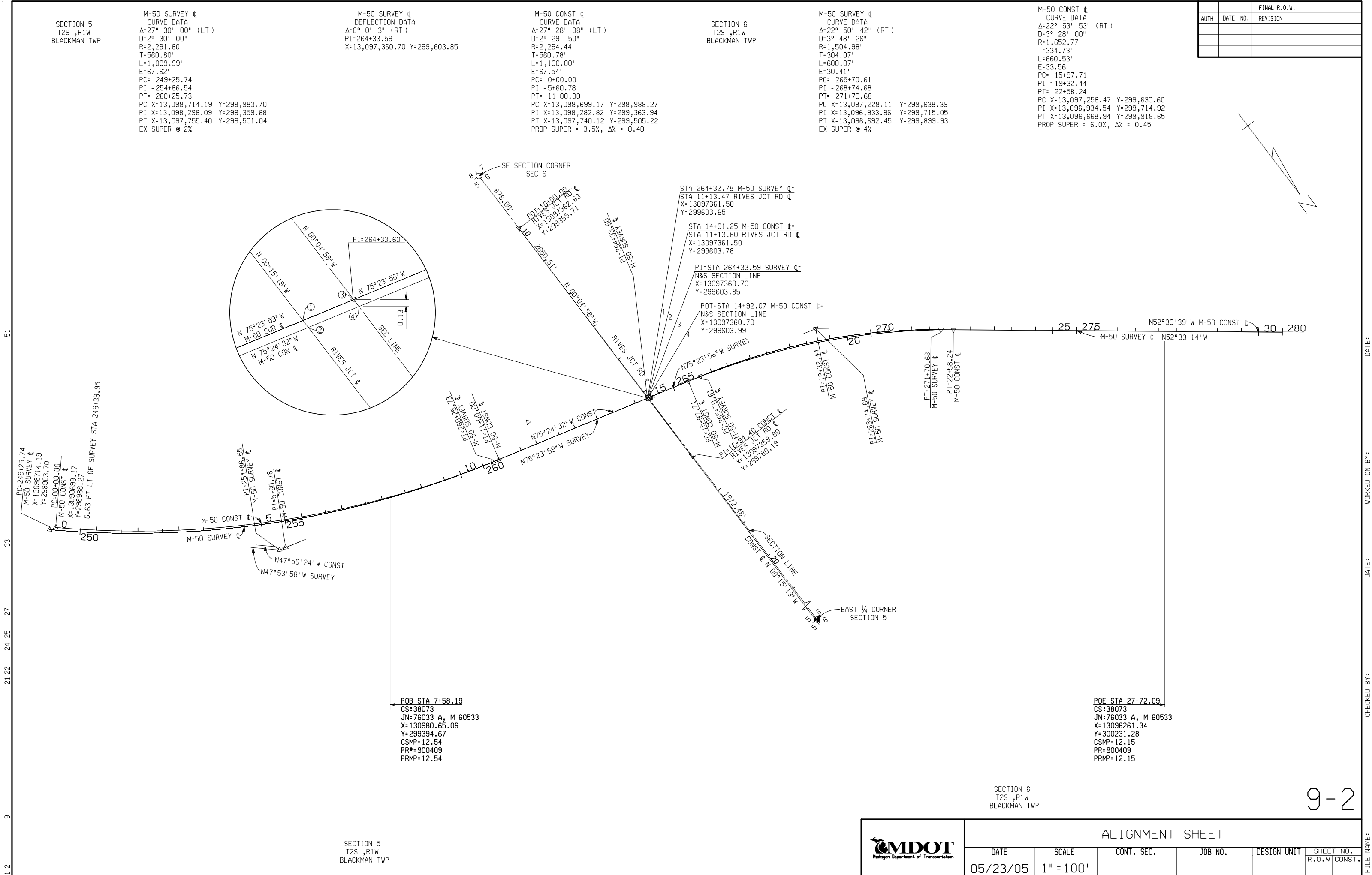
9-1



ALIGNMENT SHEET

DATE	SCALE	CONT. SEC.	JOB NO.	DESIGN UNIT	SHEET NO.
10/27/04	1" = 200'				R.O.W CONST.
					30

FILE NAME: WORKED ON BY: DATE: 10/22/04 CHECKED BY: JAS



- 1

SHOW CURVE DATA ON EACH SHEET THAT THE CURVE IS ON, SUCH THAT EACH SHEET STANDS ON ITS OWN.
- 2

BREAK OUT QUANTITIES PER INTERSECTION.
- 3

WHENEVER POSSIBLE, WITH A LOT OF DRIVEWAYS, SEWERS OR GUARDRAIL, USE DRIVEWAY SUMMARY TABLES, DRAINAGE SUMMARY TABLES OR GUARDRAIL SUMMARY TABLES. THE TOTALS IN THE TABLES SHOULD BE ENTERED INTO TRANSPORT. DO NOT DUPLICATE QUANTITIES IN TABLES INTO "MAINLINE ROADWAY QUANTITIES THIS SHEET".
- 4

SHOW MAINLINE ROADWAY QUANTITIES THIS SHEET IN THE LOWER RIGHT HAND CORNER IF POSSIBLE FOR ALL QUANTITIES NOT BROKEN DOWN IN INDIVIDUAL BREAKOUTS OR QUANTITY BOXES. DO NOT DUPLICATE THE QUANTITIES FOR SEWERS/DRIVEWAYS IN THIS AREA.
- 5

SHOW EXISTING AND PROPOSED DRAINAGE WITH SIZES AND FLOW ARROWS. SHOW FLOW ARROWS IN DITCHES.
- 6

PROPOSED WATERMAIN QUANTITIES MAY BE SHOWN ON SEPARATE WATERMAIN SHEETS FOR CLARITY.
- 7

SHOW ALL EXISTING AND PROPOSED ROW INCLUDING CROSS ROAD ROW.
- 8

SHOW ALL PROPOSED CURB AND GUTTER, DRIVEWAYS, INTERSECTIONS, SIDEWALKS AND SLOPE STAKE LINES.
- 9

SHOW ALL EXISTING UNDERGROUND UTILITIES. LABEL UNDERGROUND GAS AND WATER WITH

HAZARDOUS OR
FLAMMABLE MATERIAL

LABEL UNDERGROUND TELEPHONE, WATER TRANSMISSION LINES AND FIBER OPTICS WITH

CAUTION – CRITICAL
UNDERGROUND UTILITY

EX WATER, SEWER, SANITARY SEWER/SANITARY FORCE MAIN ONLY NEED TO BE LABELED WITHOUT FLAGGING OF A CRITICAL UNDERGROUND UTILITY BOX.

- 10

"MAINLINE REMOVAL QUANTITIES THIS SHEET" SHOULD APPEAR IN THE LOWER RIGHT CORNER OF THE SHEET IF POSSIBLE AND SHOULD NEVER INCLUDE PAY ITEMS THAT ARE SHOWN IN OTHER NOTES ON THE SHEET.
- 11

STREET NAMES SHOULD APPEAR INSIDE OF HEAVY BORDER LINES.
- 12

ROUTE AND STATION LIMITS SHOWN HERE.
- 13

CROSS HATCH OUT REMOVAL ITEMS AND SHOW Ⓡ AND ⓐ SYMBOLS.
- 14

NUMBER PROPOSED DRAINAGE STRUCTURES. ONCE THE DESIGN IS FINALIZED, NUMBERING DRAINAGE STRUCTURES BEGINNING WITH 1 ON THE FIRST PLAN SHEET AND NUMBERING SEQUENTIALLY. ADDITIONAL CATCH BASINS ADDED LATE IN THE DESIGN MAY BE INSERTED, FOR EXAMPLE AS 32A , PLACED NEAR THE CATCH BASIN NUMBERED 32 .
- 15

AERIAL ELECTRIC AND CATV MAY BE SHOWN CONNECTING TO POLES. ALWAYS SHOW OVERHEAD HIGH VOLTAGE TRANSMISSION LINES.

OTHER GUIDELINES:

- PLAN SHEETS SHALL INCLUDE, AT A MINIMUM, THE FOLLOWING
- A.

CITY LIMITS
- B.

TOWNSHIP, RANGE AND SECTION
- C.

EXISTING ALIGNMENT DATA:

1.

COORDINATES

2.

BEARINGS

3.

SUPERELEVATION DATA (EXISTING AND PROPOSED)

4.

TIES AT CROSSROADS & SECTION LINES
- D.

EXISTING PAVEMENT DESCRIPTION INCLUDING WIDTH AND TYPE
- E.

HOUSE NUMBERS AND CURRENT BUSINESS NAME ON URBAN PROJECTS
- F.

PROPERTY OWNERS NAMES OR HOUSE NUMBERS ON RURAL PROJECTS
- G.

EXISTING DRAINAGE, INDICATE SIZE, FLOW AND TYPE OF ALL EXISTING CULVERTS AND SEWERS
- H.

PAY ITEMS AND LEADERS TO SPECIFIC WORK TYPES
- I.

INCLUDE EXTRA COLUMNS IN THE PAY ITEM AREAS FOR ACT 51 PARTICIPATION OR 100% CITY WORK AND IDENTIFY CATEGORY NUMBERS

- 1 SHOW EXISTING SEWERS AND PIPES AS DASHED LINE CODES AND PROPOSED SEWERS AND PIPES AS SOLID LINE CODES AS PER DRAFTING GUIDES. LABEL PROPOSED GRADES AS +% OR -% IN THE DIRECTION OF STATIONING.
- 2 SHOW EXISTING GROUND PROFILE AS DASHED LINE AND GROUND POINTS - SIDE PROFILES.
- 3 SHOW TOP OF CURB GRADE OR PROFILES TO NEAREST 0.01%.
- 4 SHOW EXISTING AND PROPOSED FLOW LINE ELEVATIONS TO THE NEAREST 0.01 FT.
- 5 SHOW PLAN, DITCH AND SEWER GRADES AS +% OR -% IN THE DIRECTION OF STATIONING.
- 6 SHOW TYPE LINES INDICATING CURB AND GUTTER TYPE, MEDIAN BARRIER, DITCHES WITH DITCH WIDTH FRONT SLOPE AND BACK SLOPE. NOTE: DEPENDENT DITCHES ARE DESCRIBED AS DEPTH X WIDTH ROUND BOTTOM DITCH. DEPENDENT DITCHES LOCATED IN SUPER ELEVATED SECTIONS ARE DESCRIBED AS DEPTH (+ OR - SUPER) X WIDTH ROUND BOTTOM DITCH. INDEPENDENT DITCHES ARE DESCRIBED BY INDEPENDENT WIDTH ROUND BOTTOM DITCH AND MUST HAVE A GRADE AND ELEVATION SHOWN ON THE PROFILE.
- 7 SHOW LOCATION OF SUPER ELEVATION INCLUDING TRANSITION AND CROWN RUNOFF LOCATIONS.
- 8 NUMBER PROPOSED DRAINAGE STRUCTURES.

OTHER GUIDELINES:

- A. SHOW VERTICAL PI STATIONS, CURVE LENGTHS, TANGENT GRADES, HIGH/LOW POINTS, K VALUES.
- B. SHOW ROCK, PEAT, MUCK AND UNDERCUT LIMITS AND TREATMENTS.
- C. SHOW CROSSROAD OR STREET PROFILES, IF PERTINENT.
- D. SHOW ANY TEMPORARY ROADS IN PROJECT LIMITS.
- E. SHOW WATER TABLE ELEVATIONS.
- F. EARTHWORK LIMITS AND QUANTITIES ARE SHOWN ON PROFILES.
- G. SHOW EXISTING UNDERGROUND FIELD TILE IF APPLICABLE.
- H. SHOW PROPOSED OR EXISTING BRIDGE PROFILE IF APPLICABLE
- I. SHOW PROPOSED OR EXISTING BOX/SLAB CULVERT IF APPLICABLE
- J. EXISTING UNDERGROUND UTILITY INFORMATION
SHOULD BE SHOWN ON THE PROFILE IN AREAS OF POTENTIAL CONFLICT WITH PROPOSED UNDERGROUND WORK.
ACTUAL OR APPROXIMATE TOP OF WATERMAIN AND TELEPHONE ELEVATIONS SHOULD BE LABELED. APPROXIMATE
OR ACTUAL CENTER OF GAS MAIN SHOULD BE LABELED. DRAW FORMATION OF EXISTING UTILITY TO SCALE SUCH AS
A TELEPHONE DUCT OR OUTSIDE DIMENSIONS OF SEWERS/WATERMAINS ON THE PROFILE ESPECIALLY IN AREAS OF
POTENTIAL CONFLICT WITH PROPOSED UNDERGROUND CONSTRUCTION.

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LEWIS STREET REMOVE QUANTITIES

731	Syd	Pavt, Rem
1	Ea	Hydrant, Rem
1	Ea	Dr Structure, Rem
255	Ft	Curb and Gutter, Rem

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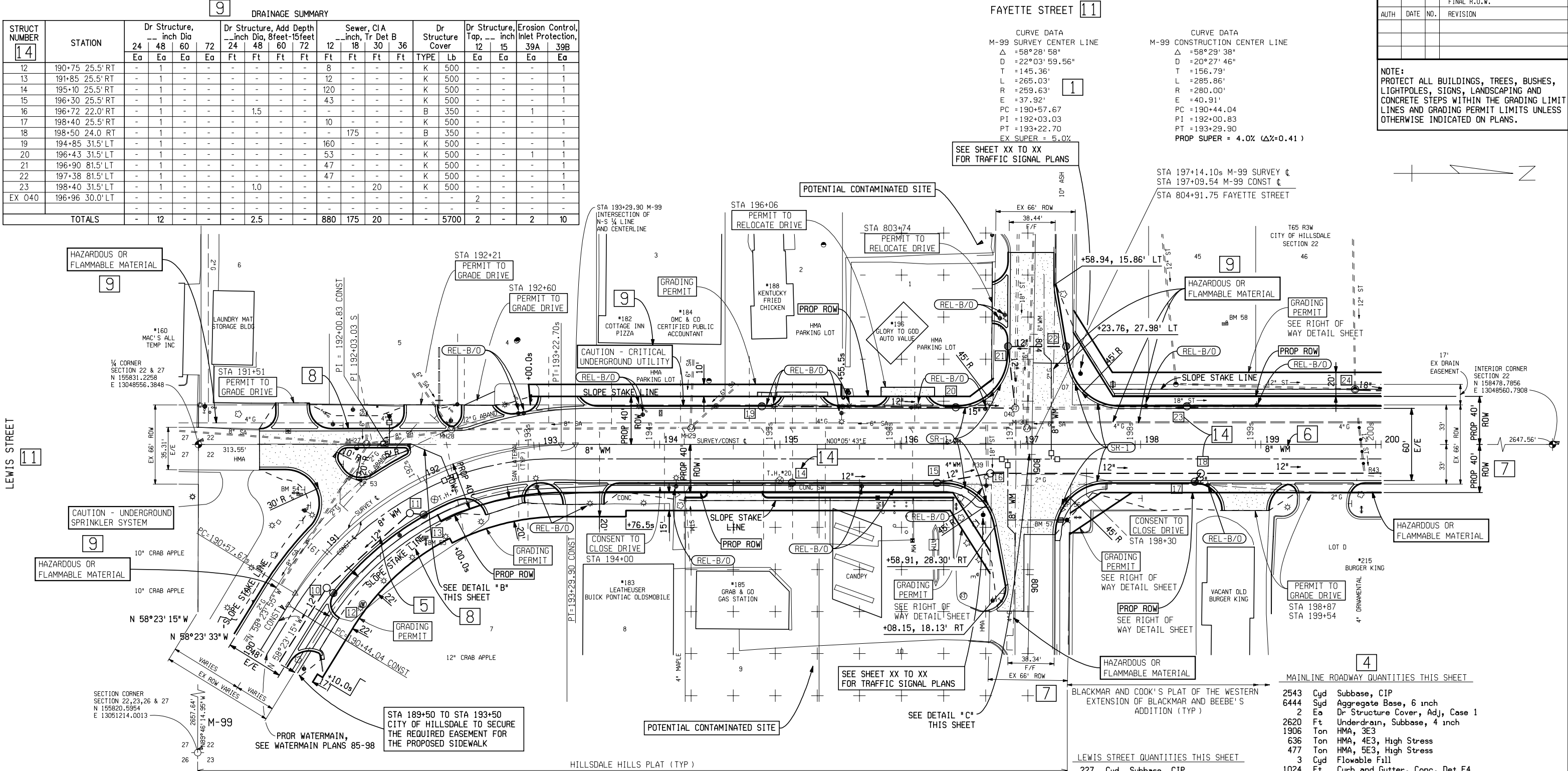
9

DRAINAGE SUMMARY

STRUCT NUMBER	STATION	Dr Structure, -- inch Dia				Dr Structure, Add Depth				Sewer, CIA --inch, Tr Det B				Dr Structure Cover		Dr Structure, Tap, -- inch		Erosion Control, Inlet Protection,	
		24	48	60	72	24	48	60	72	12	18	30	36	TYPE	Lb	12	15	39A	39B
		Ea	Ea	Ea	Ea	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft			Ea	Ea	Ea	Ea
12	190+75 25.5' RT	-	1	-	-	-	-	-	-	8	-	-	-	K	500	-	-	-	1
13	191+85 25.5' RT	-	1	-	-	-	-	-	-	12	-	-	-	K	500	-	-	-	1
14	195+10 25.5' RT	-	1	-	-	-	-	-	-	120	-	-	-	K	500	-	-	-	1
15	196+30 25.5' RT	-	1	-	-	-	-	-	-	43	-	-	-	K	500	-	-	-	1
16	196+72 22.0' RT	-	1	-	-	-	1.5	-	-	-	-	-	-	B	350	-	-	1	-
17	198+40 25.5' RT	-	1	-	-	-	-	-	-	10	-	-	-	K	500	-	-	-	1
18	198+50 24.0 RT	-	1	-	-	-	-	-	-	-	175	-	-	B	350	-	-	-	-
19	194+85 31.5' LT	-	1	-	-	-	-	-	-	160	-	-	-	K	500	-	-	-	1
20	196+43 31.5' LT	-	1	-	-	-	-	-	-	53	-	-	-	K	500	-	-	1	1
21	196+90 81.5' LT	-	1	-	-	-	-	-	-	47	-	-	-	K	500	-	-	-	1
22	197+38 81.5' LT	-	1	-	-	-	-	-	-	47	-	-	-	K	500	-	-	-	1
23	198+40 31.5' LT	-	1	-	-	-	1.0	-	-	-	-	20	-	K	500	-	-	-	1
EX O40	196+96 30.0' LT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTALS		-	12	-	-	-	2.5	-	-	880	175	20	-	-	5700	2	-	2	10

CURVE DATA	
M-99 SURVEY CENTER LINE	M-99 CONSTRUCTION CENTER LINE
Δ = 58°28' 58"	Δ = 58°29' 38"
D = 22°03' 59.56"	D = 20°27' 46"
T = 145.36'	T = 156.79'
L = 265.03'	L = 285.86'
R = 259.63'	R = 280.00'
E = 37.92'	E = 40.91'
PC = 190+57.67	PC = 190+44.04
PI = 192+03.03	PI = 192+00.83
PT = 193+22.70	PT = 193+29.90
EX SUPER = 5.0%	PROP SUPER = 4.0% (Δ% = 0.41)

FINAL R.O.W.			
AUTH	DATE	NO.	REVISION
NOTE: PROTECT ALL BUILDINGS, TREES, BUSHES, LIGHTPOLES, SIGNS, LANDSCAPING AND CONCRETE STEPS WITHIN THE GRADING LIMIT LINES AND GRADING PERMIT LINES UNLESS OTHERWISE INDICATED ON PLANS.			



* FOR INFORMATION ONLY, NOT A PAY ITEM													
DRIVEWAY SUMMARY													
STATION	Driveway Opening, Conc		DRIVEWAY APPROACHES										
	WIDTH AT SWK*	Det L	Det M	DISTANCE FROM BOC TO MATCH*	ENTERING RADIUS*	EXITING RADIUS*	Approach	HMA Approach	Driveway Nonreinf, Conc	C and G Conc	Curb Conc	Sidewalk Conc	Driveway Slope
190+40, RT	-	-	67	15.55	20	15	Syd	Ton	-	-	-	-	1.4
191+51, LT	-	-	59	21.36	20	15	-	-	-	-	-	-	10.0
192+24, LT	-	-	53	19.55	20	15	-	-	-	-	-	-	3.7
192+59, RT	-	-	69	17.6	20	15	-	-	-	-	-	-	1.5
192+60, LT	-	-	54	15	20	15	-	-	-	-	-	-	2.0 (5')
193+18, LT	-	-	60	9.05	20	15	-	-	-	-	-	-	-4.4
193+32, RT	-	-	66	17.73	20	15	-	-	-	-	-	-	1.6
194+62, RT	45	49	-	14.67	-	-	42	-	14	-	15	282	4.0/2.0
195+18, LT	-	-	62	11.59	20	15	17	-	6	-	-	-	10.0
196+06, LT	-	-	62	15.68	20	15	38	-	13	-	-	-	10.0
198+87, RT	-	-	85	23.00	25	25	111	-	37	-	-	-	2.0 (10')
199+54, RT	-	-	64	31.81	20	15	-	-	-	-	-	-	2.0
803+74, RT	-	-	64	13.00	20	15	52	-	17	-	-	-	8.0
TOTALS	-	-	770	-	-	-	667	-	222	-	303	414	-

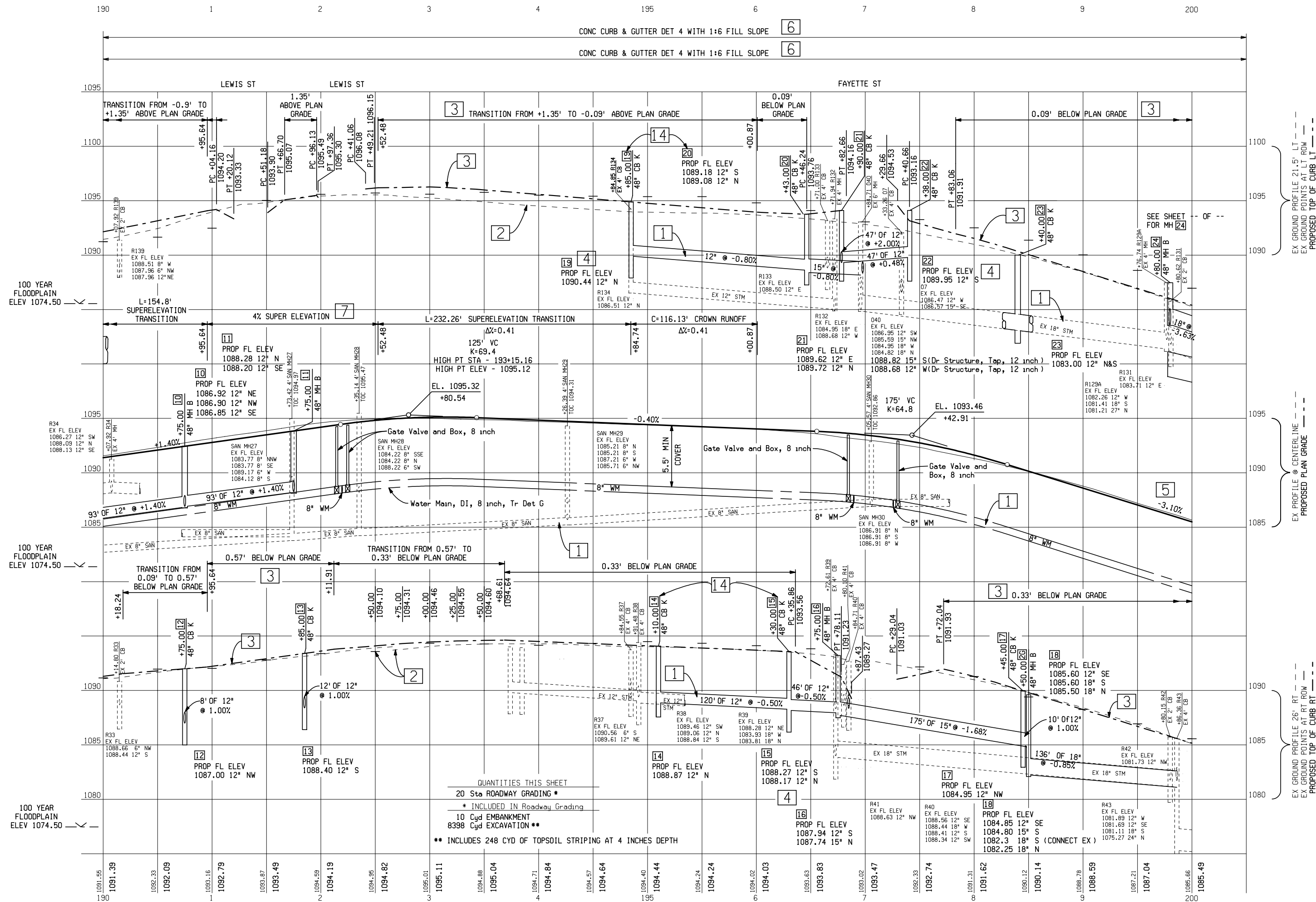
PROPOSED WATER SERVICES SHALL BE PROVIDED FOR ALL EXISTING WATER SERVICES. THE COST OF LOCATING EXISTING WATER SERVICES SHALL BE INCLUDED IN Water Serv and Water Serv, Long. THE CONTRACTOR SHALL COORDINATE LOCATING EXISTING WATER SERVICES WITH THE CITY OF HILLSDALE BOARD OF PUBLIC UTILITIES.


SANITARY SEWER LATERALS AND STORM SEWER LATERALS ARE SHOWN FOR INFORMATION ONLY AND REPRESENT THEIR APPROXIMATE LOCATION, ADDITIONAL LATERALS MAY BE ENCOUNTERED.

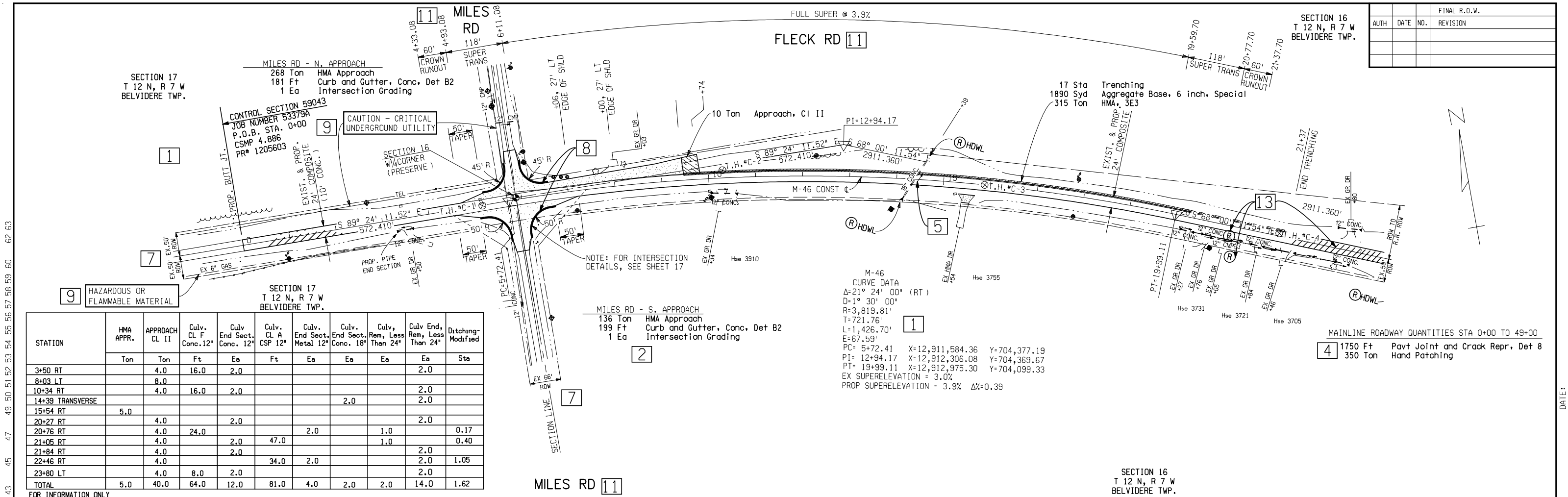
MAINLINE ROADWAY QUANTITIES THIS SHEET			
2543	Cyd	Subbase, CIP	
6444	Syd	Aggregate Base, 6 inch	
2	Ea	Dr Structure Cover, Adj, Case 1	
2620	Ft	Underdrain, Subbase, 4 inch	
1906	Ton	HMA, 3E3	
636	Ton	HMA, 4E3, High Stress	
477	Ton	HMA, 5E3, High Stress	
3	Cyd	Flowable Fill	
1024	Ft	Curb and Gutter, Conc, Det F4	
200	Ft	Curb, Conc, Det E	
1393	Sft	Sidewalk, Conc, 4 inch	
320	Sft	Sidewalk Ramp, ADA	
2	Ea	Water Main, 6 inch, Cut and Plug	
40	Ft	Water Main, DI, 6 inch, Tr Det G	
1240	Ft	Water Main, DI, 8 inch, Tr Det G	
6	Ea	Gate Valve and Box, 8 inch	
2	Ea	Hydrant Assembly	
4	Ea	Water Serv	
7	Ea	Water Serv, Long	
880	Ft	Video Taping Sewer and Culv Pipe, 12 inch	
175	Ft	Video Taping Sewer and Culv Pipe, 18 inch	
20	Ft	Video Taping Sewer and Culv Pipe, 30 inch	

LEWIS STREET QUANTITIES THIS SHEET			
227	Cyd	Subbase, CIP	
544	Syd	Aggregate Base, 6 inch	
2	Ea	Dr Structure Cover, Adj, Case 1	
150	Ton	HMA Approach, 3E3	
90	Ton	HMA Approach, High Stress	
282	Ft	Curb and Gutter, Conc, Det F4	

FAYETTE STREET QUANTITIES THIS SHEET			
652	Cyd	Subbase, CIP	
1293	Syd	Aggregate Base, 6 inch	
1	Ea	Dr Structure Cover, Adj, Case 1	
380	Ton	HMA Approach, 3E3	
222	Ton	HMA Approach, High Stress	
386	Ft	Curb and Gutter, Conc, Det F4	

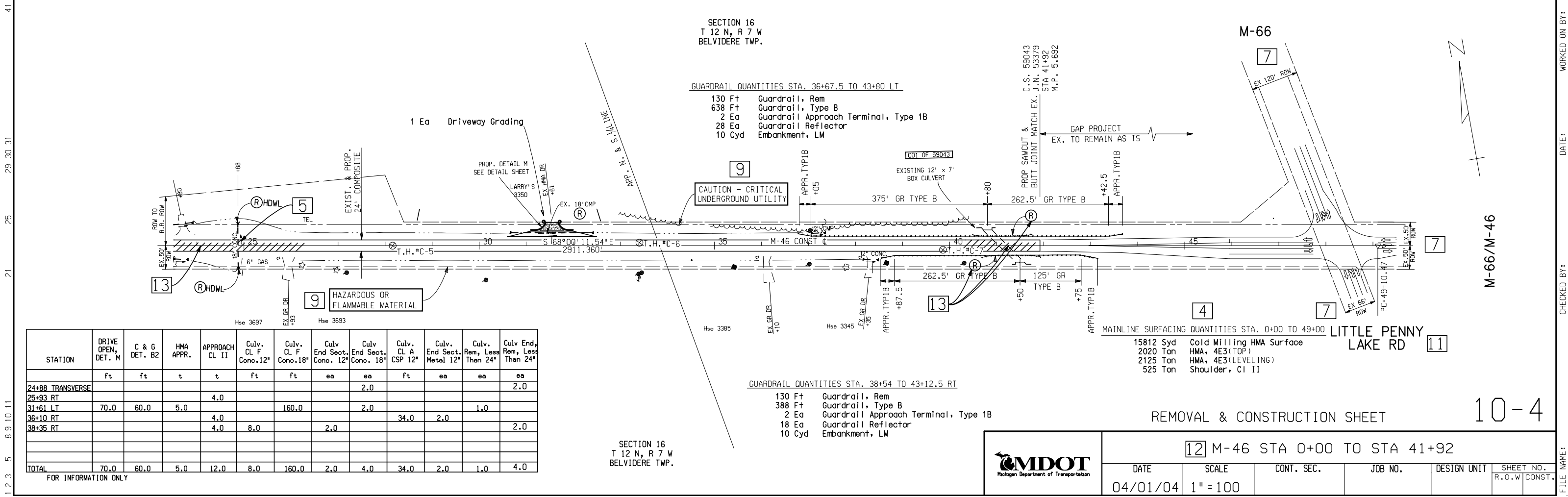


		<div style="border: 1px solid black; padding: 5px; display: inline-block;">12</div> M-99 STA 190+00 TO STA 200+00				10-3		<div style="display: flex; justify-content: space-between;"> <div> AUTH </div> <div> DATE </div> <div> NO. </div> </div>		FINAL R.O.W. REVISION	
SHEET NO. 522		CONSTRUCTION 		JOB NO.		SCALE HORIZ. 1" = 40' VERT. 1" = 4'		CONT. SEC.		DESIGN UNIT JACKSON TSC	




STATION	HMA APPR.	APPROACH CL II	Culv. CL F Conc. 12"	Culv. End Sect. Conc. 12"	Culv. CL A CSP 12"	Culv. End Sect. Metal 12"	Culv. End Sect. Conc. 18"	Culv. Rem. Less Than 24"	Culv. End, Rem. Less Than 24"	Ditching-Modified
3+50 RT		4.0	16.0	2.0					2.0	
8+03 LT		8.0							2.0	
10+34 RT		4.0	16.0	2.0					2.0	
14+39 TRANSVERSE							2.0		2.0	
15+54 RT	5.0									
20+27 RT		4.0		2.0					2.0	
20+76 RT		4.0	24.0			2.0		1.0	0.17	
21+05 RT		4.0		2.0	47.0			1.0	0.40	
21+84 RT		4.0		2.0					2.0	
22+46 RT		4.0			34.0	2.0			2.0	1.05
23+80 LT		4.0	8.0	2.0					2.0	
TOTAL	5.0	40.0	64.0	12.0	81.0	4.0	2.0	2.0	14.0	1.62

FOR INFORMATION ONLY



STATION	DRIVE OPEN, DET. M	C & G DET. B2	HMA APPR.	APPROACH CL II	Culv. CL F Conc. 12"	Culv. CL F Conc. 18"	Culv. End Sect. Conc. 12"	Culv. End Sect. Conc. 18"	Culv. CL A CSP 12"	Culv. End Sect. Metal 12"	Culv. Rem. Less Than 24"	Culv. End, Rem. Less Than 24"
24+88 TRANSVERSE								2.0				2.0
25+93 RT				4.0								
31+61 LT	70.0	60.0	5.0			160.0		2.0			1.0	
36+10 RT				4.0					34.0	2.0		
38+35 RT				4.0	8.0		2.0					2.0
TOTAL	70.0	60.0	5.0	12.0	8.0	160.0	2.0	4.0	34.0	2.0	1.0	4.0

FOR INFORMATION ONLY



12

M-46 STA 0+00 TO STA 41+92

DATE

04/01/04

SCALE

1" = 100

CONT. SEC.

JOB NO.

DESIGN UNIT

SHEET NO.

10-4

R.O.W

CONST.

SECTION 5
T2S ,R1W
BLACKMAN TWP

RIVES JUNCT RD.
M-50 SURVEY &
DEFLECTION DATA
Δ=0° 0' 3" (LT)
PI=264+33.60
X=13,097,360.71 Y=299,603.86

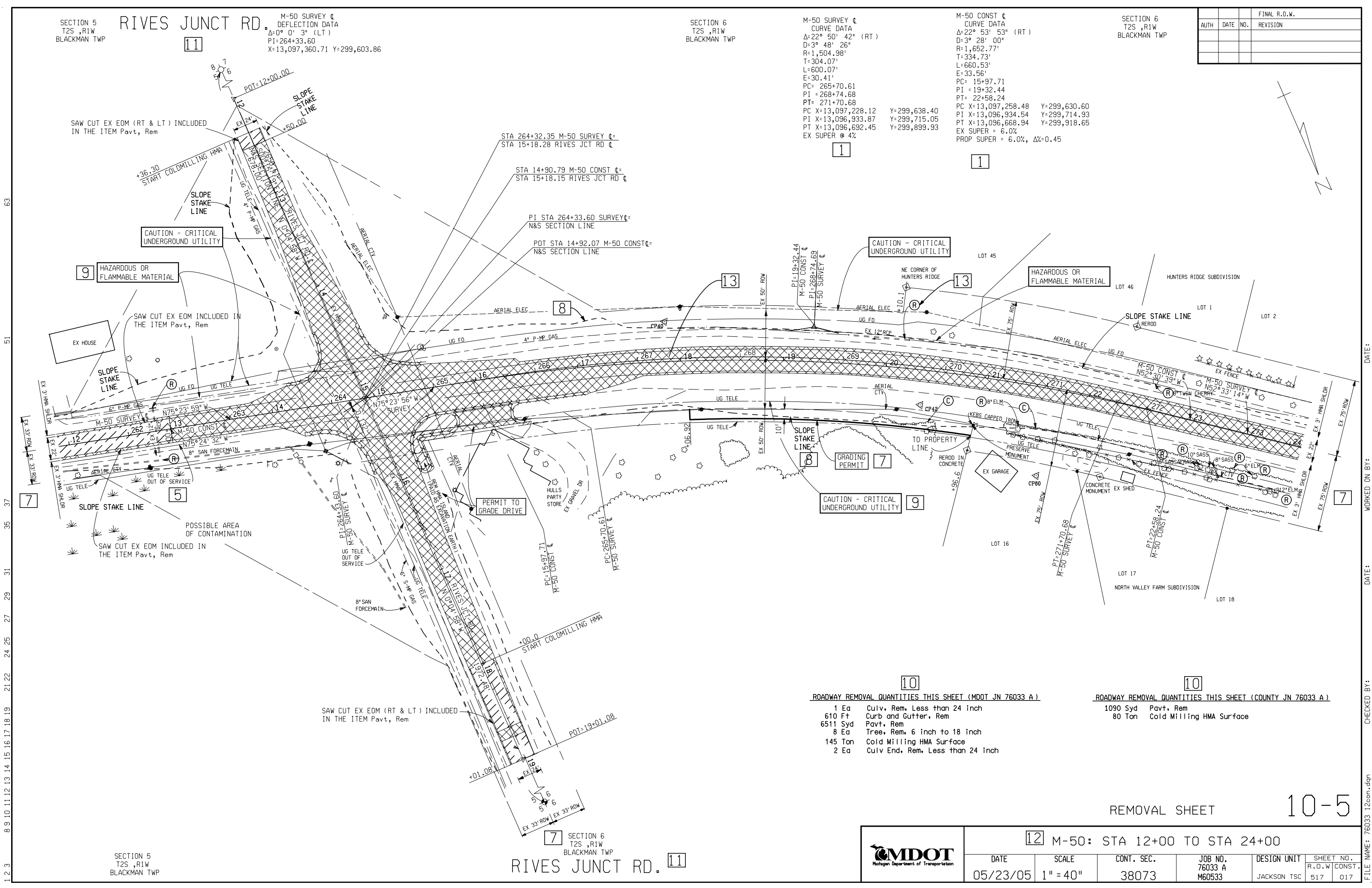
SECTION 6
T2S ,R1W
BLACKMAN TWP

M-50 SURVEY &
CURVE DATA
Δ=22° 50' 42" (RT)
D=3° 48' 26"
R=1,504.98'
T=304.07'
L=600.07'
E=30.41'
PC= 265+70.61
PI = 268+74.68
PT= 271+70.68
PC X=13,097,228.12 Y=299,638.40
PI X=13,096,933.87 Y=299,715.05
PT X=13,096,692.45 Y=299,899.93
EX SUPER @ 4%

M-50 CONST &
CURVE DATA
Δ=22° 53' 53" (RT)
D=3° 28' 00"
R=1,652.77'
T=334.73'
L=660.53'
E=33.56'
PC= 15+97.71
PI = 19+32.44
PT= 22+58.24
PC X=13,097,258.48 Y=299,630.60
PI X=13,096,934.54 Y=299,714.93
PT X=13,096,668.94 Y=299,918.65
EX SUPER = 6.0%
PROP SUPER = 6.0%, ΔX=0.45

SECTION 6
T2S ,R1W
BLACKMAN TWP

FINAL R.O.W.			
AUTH	DATE	NO.	REVISION



ROADWAY REMOVAL QUANTITIES THIS SHEET (MDOT JN 76033 A)

1 Ea	Culv. Rem. Less than 24 inch
610 Ft	Curb and Gutter, Rem
6511 Syd	Pavt, Rem
8 Ea	Tree, Rem, 6 inch to 18 inch
145 Ton	Cold Milling HMA Surface
2 Ea	Culv End, Rem, Less than 24 inch

ROADWAY REMOVAL QUANTITIES THIS SHEET (COUNTY JN 76033 A)

1090 Syd	Pavt, Rem
80 Ton	Cold Milling HMA Surface

SECTION 5
T2S ,R1W
BLACKMAN TWP

RIVES JUNCT RD.
SECTION 6
T2S ,R1W
BLACKMAN TWP



M-50: STA 12+00 TO STA 24+00

DATE	SCALE	CONT. SEC.	JOB NO.	DESIGN UNIT	SHEET NO.
05/23/05	1" = 40"	38073	76033 A M60533	JACKSON TSC	R.O.W CONST. 517 017

REMOVAL SHEET

10-5

FILE NAME: 76033 12con.dgn
CHECKED BY: DATE: WORKED ON BY: DATE:

SECTION 5
T2S ,R1W
BLACKMAN TWP

RIVES JUNCT RD.

M-50 SURVEY &
DEFLECTION DATA
Δ=0° 0' 3" (LT)
PI=264+33.60
X=13,097,360.71 Y=299,603.86

11

CULVERT EXTENSION AND END SECTION
REPLACEMENT AT STA 12+86.02

JN 76033A
24 Ft Culv. CI A, 12 inch
1 Ea Culv End Sect., 12 inch

SEE SHEET 25-42
FOR SIGNAL PLANS

CAUTION - CRITICAL
UNDERGROUND UTILITY

WORK REQUIRED TO TIE
INTO EXISTING CONC CULVT
INCLUDED IN PAYMENT
FOR CULVT, CI A 12 inch

CONC SHLDR
GUTTER SPILLWAY,
RIP RAP, PLAIN

CONC CURB AND
GUTTER B2 (TYP)

50' R

50' TAPER
(TYP)

11' 14'

11' 14'

11' 14'

11' 14'

11' 14'

11' 14'

11' 14'

11' 14'

11' 14'

11' 14'

11' 14'

11' 14'

11' 14'

11' 14'

11' 14'

11' 14'

11' 14'

11' 14'

DRIVEWAY APPROACHES (JN 76033 A)

STATION	*** HMA Approach, High Stress* Ton	Approach CI I Ton	Curb and Gutter, Conc. Det B2 Ft	Curb, Conc. Det E2 Ft	Driveway Opening, Conc. Det M Ft	Const Limits From C Ft
15+97.71 RT	30	51	42	15	80	48
16+23.03 RT**	13	13				30
TOTAL	43	64	42	15	80	

* REFER TO HMA APPLICATION TABLE ON SHEET*2 FOR MIXTURES AND DEPTHS
** LOCATED ON RIVES JUNCTION RD
***PAID FOR UNDER JN M60533

SECTION 5
T2S ,R1W
BLACKMAN TWP

RIVES JUNCTION RD QUANTITIES (SOUTH)

JN M60533	JN 76033A	
165	0 Ton	HMA, 4E3, High Stress
261	0 Ton	HMA, 3E3
202	0 Ton	HMA Approach, High Stress
1820	0 Syd	Aggregate Base, 6 inch
0	70 Ton	Shoulder, CI II
0	200 Ft	Curb and Gutter, Conc. Det B2
0	1 Ea	Shoulder Gutter, Conc. Det 2
0	20 Ft	Spillway, Conc
0	10 Syd	Riprap, Plain
0	40 Ft	Underdrain, Subbase, 4 inch

SECTION 6
T2S ,R1W
BLACKMAN TWP

M-50 SURVEY &
CURVE DATA
Δ=22° 50' 42" (RT)
D=3° 48' 26"
R=1,504.98'
T=304.07'
L=600.07'
E=30.41'
PC= 265+70.61
PI = 268+74.68
PT= 271+70.68
PC X=13,097,228.12 Y=299,638.40
PI X=13,096,933.87 Y=299,715.05
PT X=13,096,682.45 Y=299,899.93
EX SUPER @ 2%

1

M-50 CONST &
CURVE DATA
Δ=22° 53' 53" (RT)
D=3° 28' 00"
R=1,652.77'
T=334.73'
L=660.53'
E=33.56'
PC= 15+97.71
PI = 19+32.44
PT= 22+58.24
PC X=13,097,258.48 Y=299,630.60
PI X=13,096,934.54 Y=299,714.93
PT X=13,096,668.94 Y=299,918.65
EX SUPER = 6.0%
PROP SUPER = 6.0%, ΔX=0.45

1

SECTION 6
T2S ,R1W
BLACKMAN TWP

AUTH	DATE	NO.	REVISION

FINAL R.O.W.

MAINLINE CONSTRUCTION QUANTITIES THIS SHEET

JN M60533	JN 76033A	
1198	0 Ton	HMA, 4E3, High Stress
833	0 Ton	HMA, 3E3
5657	0 Syd	Aggregate Base, 6 inch
0	150 Ton	Shoulder, CI II
0	2300 Ft	Underdrain, Subbase, 4 inch
0	150 Ft	Underdrain Outlet, 4 inch
0	1 Ea	Underdrain, Outlet Ending, 4 inch
0	30 Syd	Riprap, Plain
0	14 Syd	Paved Ditch, HMA
671	0 Ft	HMA Curb - Modified

RIVES JUNCTION RD QUANTITIES (NORTH)

JN M60533	JN 76033A	
250	0 Ton	HMA, 4E3, High Stress
370	0 Ton	HMA, 3E3
327	0 Ton	HMA Approach, High Stress
2710	0 Syd	Aggregate Base, 6 inch
0	210 Ft	Curb and Gutter, Conc. Det B2
0	550 Ft	Underdrain, Subbase, 4 inch
0	60 Ft	Curb, Conc. Det E2
0	1 Ea	Shoulder Gutter, Conc. Det 2
0	20 Ft	Spillway, Conc
0	10 Syd	Riprap, Plain
0	50 Ton	Hand Patching
0	70 Ton	Shoulder, CI II
0	1075 Sft	Sidewalk, Conc. 4 inch
0	52 Ft	Culv. CI A, 12 inch
0	2 Ea	Dr Marker Post
0	3 Sta	Ditch Cleanout

SEWER TABLE (JN 76033 A)

STRUCTURE NO.	X COORDINATE	Y COORDINATE	Dr Structure, 48 inch dia Ea	*Sewer, Class E, 18 inch, Tr Det B Ft	*Dr Structure, Cover, Type Lb	Culv. Slip End Sect., 1 on 4, 18 inch, Transv. Ea	*Sewer, Class E, 12 inch, Tr Det B Ft	Culv End Sect., 12 inch Ea
01	13097549.37	299511.04	1		G 200			
02	13097334.00	299657.67	1	200	J 655	1	32	
03	13097340.17	299687.45	1		J 655		48	
04	13097334.14	299736.39	1		R 550		40	
05	13097295.26	299669.46	1		J 655		80	
06	13097216.76	299669.45	1		J 655		120	
07	13097104.69	299709.47	1		J 655		32	1
08	13097336.52	299958.34	1		G 200			2
TOTAL			8	200	4225	1	352	3

*INCLUDED IN MDOT PORTION OF JOB JN M60533

CONSTRUCTION SHEET

12 M-50: STA 12+00 TO STA 24+00



DATE	SCALE	CONT. SEC.	JOB NO.	DESIGN UNIT	SHEET NO. R.O.W. CONST.
05/23/05	1" = 40"				

RIVES JUNCT RD. 11

SECTION 6
T2S ,R1W
BLACKMAN TWP

10-6

FILE NAME: 76033 12con.dgn

TABLE OF CONTENTS

- 11-1) VICINITY WETLAND OVERALL SITE GRADING SHEET- SHOW LOCAL ROADS AND GENERAL FLOW OF WATER CHARACTERISTICS TO COUNTY DRAINS/RIVERS/LAKES OR ADJACENT WETLANDS. QUANTITIES MAYBE PLACED ON THIS SHEET.
- 11-2) WETLAND TYPICAL CROSS SECTIONS
- 11-3) WETLAND DETAILS SHEET
- 11-4) BENCH MARKS AND CONTROL POINT WITNESSES FOR THE WETLAND AREA
- 11-5) REMOVAL SHEET - SHOW SOIL BORINGS, EX CONTOURS, REMOVAL ITEMS AND MONITORING WELLS
- 11-6) CONSTRUCTION SHEET - SHOW PROPOSED CONTOURS, GENERAL NOTES, QUANTITIES, EROSION CONTROL ITEMS
- 11-7) SEEDING SHEETS
- 11-8) PLANTING DETAIL SHEET
- 11-9) WETLAND SOIL BORINGS
- 11-10) DETAIL GRADING CROSS SECTIONS. MANY TIMES THESE CROSS SECTIONS SHOULD BE DRAWN AT 100' INTERVALS FOR GRADING STAKEOUT

WETLAND CREATION PLANS

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

MUSSON ROAD

QUANTITIES - THIS SHEET AND SHEETS 8,9,10 AND 13

181500	Syd	Topsoil Surface, Salv, 6 inch
130700	Syd	Topsoil Surface, Salv, 4 inch
52715	Cyd	Grading, Wetland
4	Ea	Stoplog Structure
6385	Cyd	Embankment, CIP, Wetland
1915	Ft	Ditch Cleanout, Mod
140	Ft	Culv, C1 A, 18 inch
118	Ft	Culv, C1 A, 12 inch
2	Ea	Sewer Bulkhead, 12 inch
7730	Ft	Erosion Control, Silt Fence (26)
373	Syd	Riprap, Plain (7)
10	Cyd	Erosion Control, Sediment Basin (21)
5	Ft	Erosion Control, Check Dam, Stone (37)
1	LS	Cofferdams

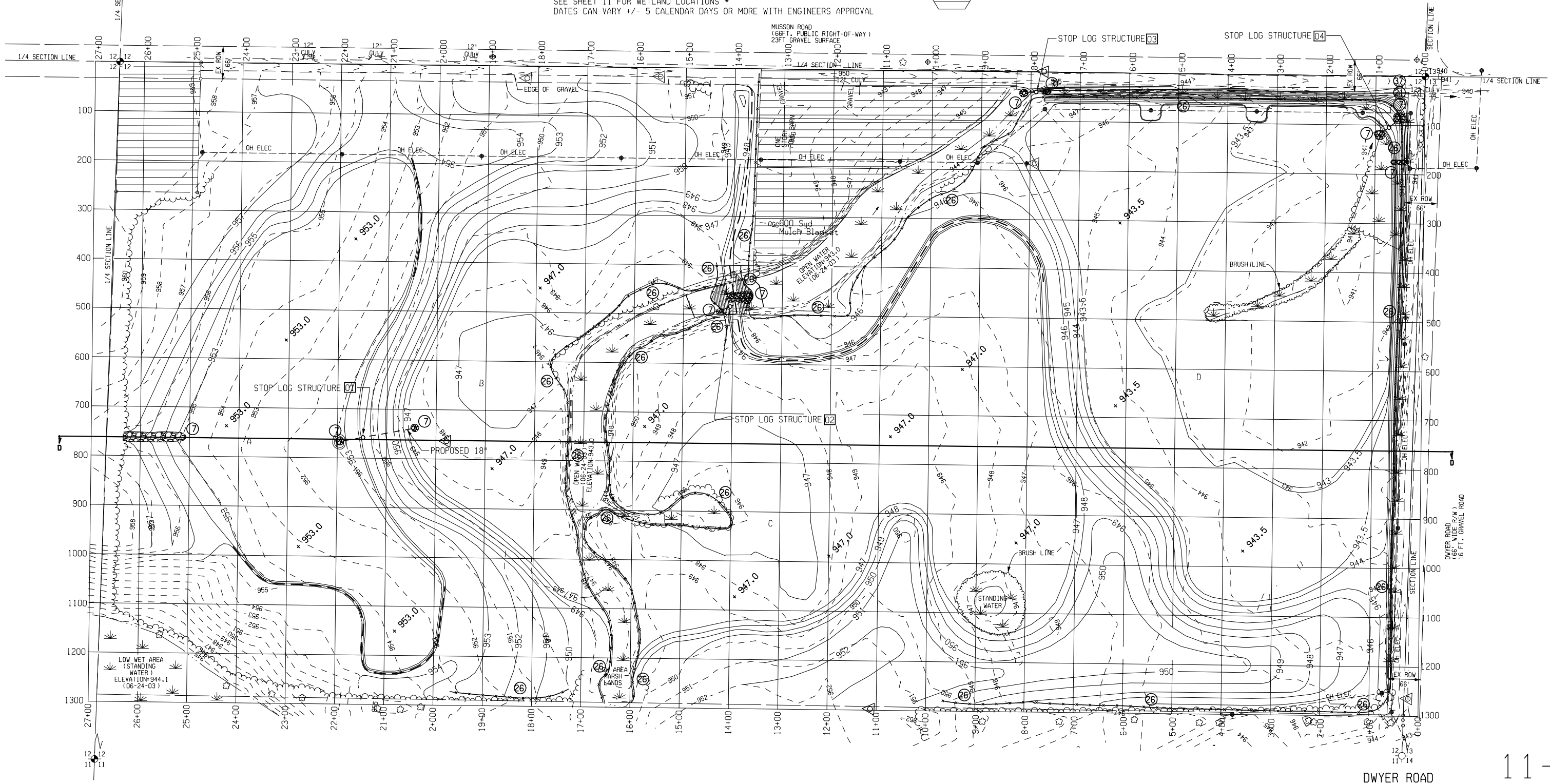
SEE SHEET 11 FOR WETLAND LOCATIONS *
DATES CAN VARY +/- 5 CALENDAR DAYS OR MORE WITH ENGINEERS APPROVAL

LEGEND

- EX CONTOUR
- 946 — PROP LEGEND
- (7) SOIL EROSION MEASURE
- + 947.0 SPOT ELEVATION
- RIPRAP
- [01] STOP LOG STRUCTURE
- (26) SILT FENCE
- TEMP EARTH STOCKPILE AREA

FINAL R.O.W.			
AUTH	DATE	NO.	REVISION

DWYER ROAD



DWYER ROAD

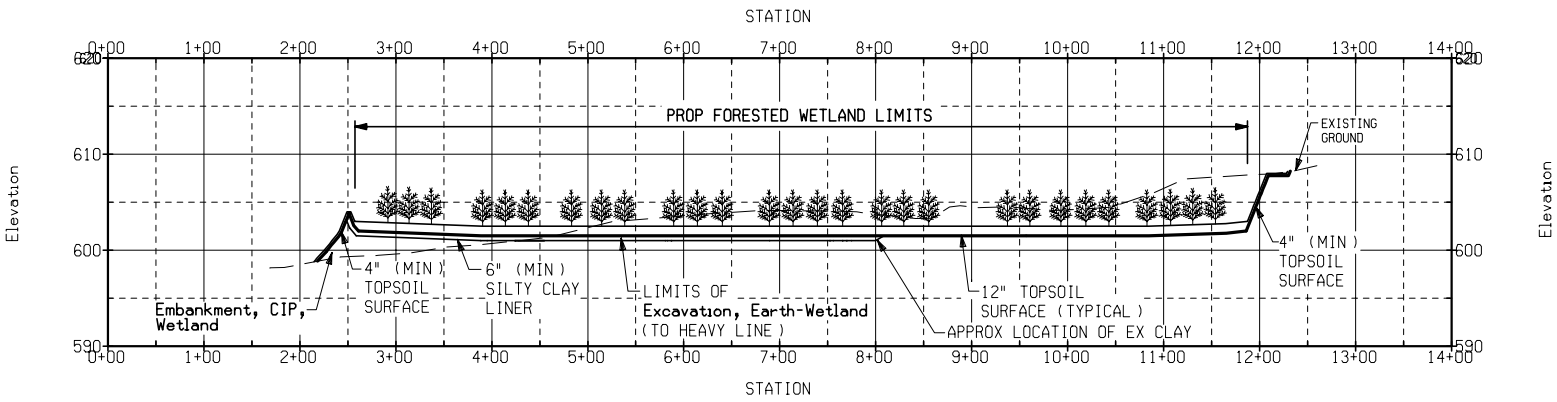
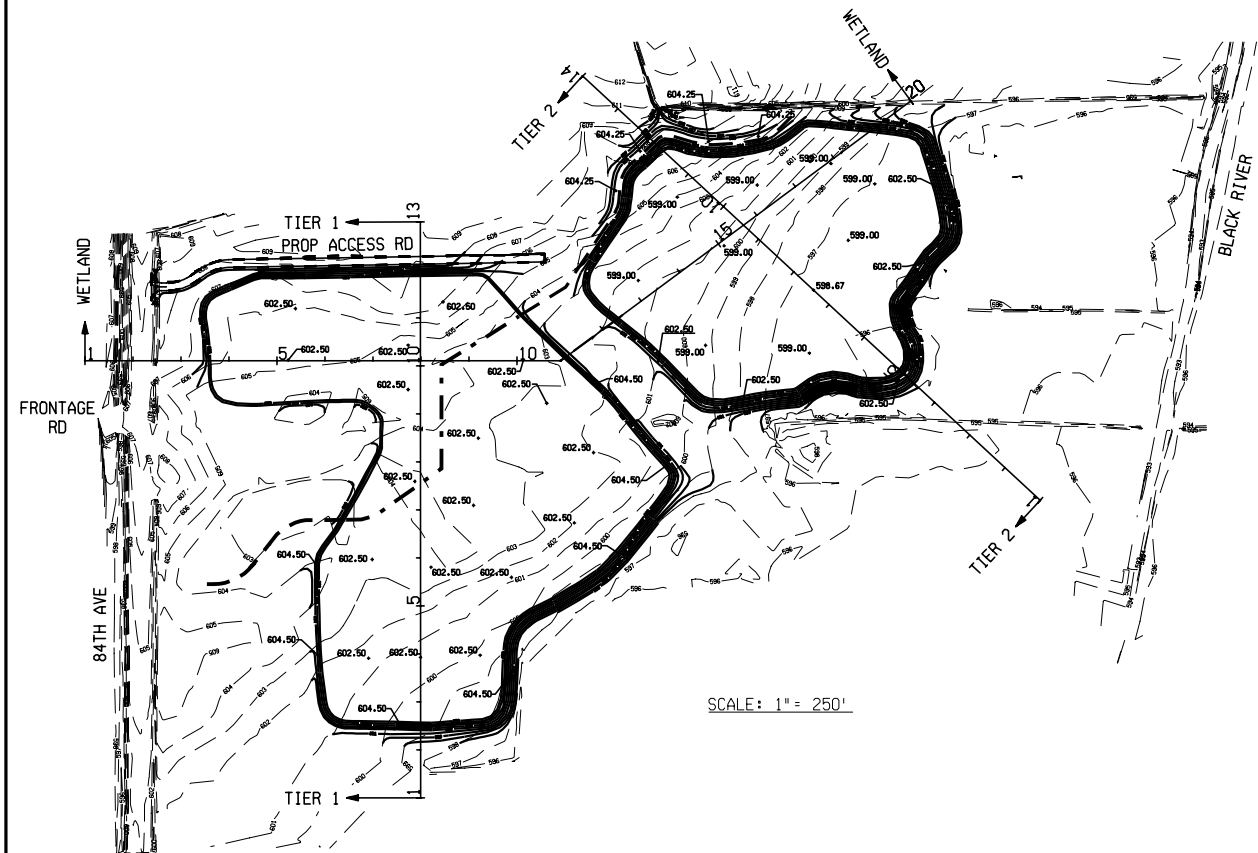
11-1



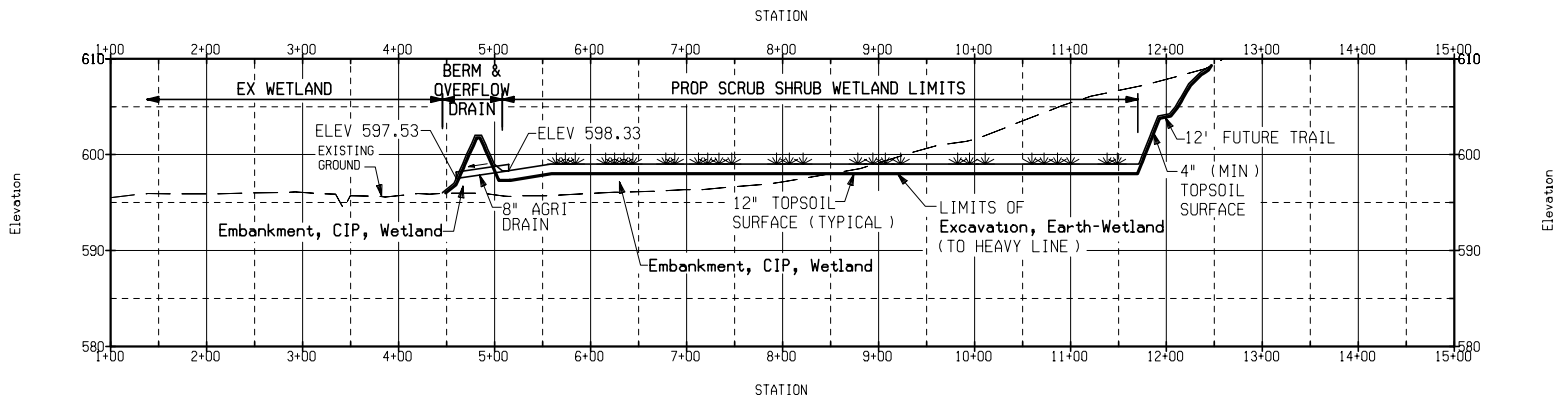
WETLAND OVERALL SITE GRADING SHEET

DATE	SCALE	CONT. SEC.	JOB NO.	DESIGN UNIT	SHEET NO.
05/18/05	1" = 100'	47082	72703A	BRIGHTON TSC	R.O.W. CONST.
					7

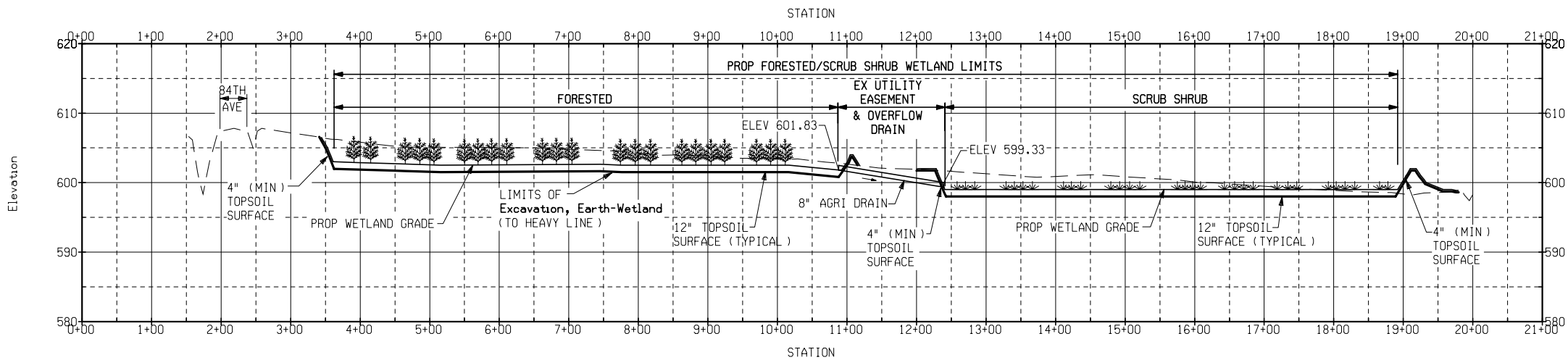
FINAL R.O.W.			
AUTH	DATE	NO.	REVISION



TIER 1 SECTION



TIER 2 SECTION



WETLAND SECTION

LEGEND

	FORESTED WETLAND
	SCRUB SHRUB WETLAND
	EX GROUND
	PROP GRADE

11-2

	WETLAND TYPICAL CROSS SECTION				
	DATE 05/09/05	SCALE 1"=10' VERT. 1"=100' HORIZ.	CONT. SEC.	JOB NO.	DESIGN UNIT
					SHEET NO. R.O.W CONST.

DATE:

WORKED ON BY:

DATE:

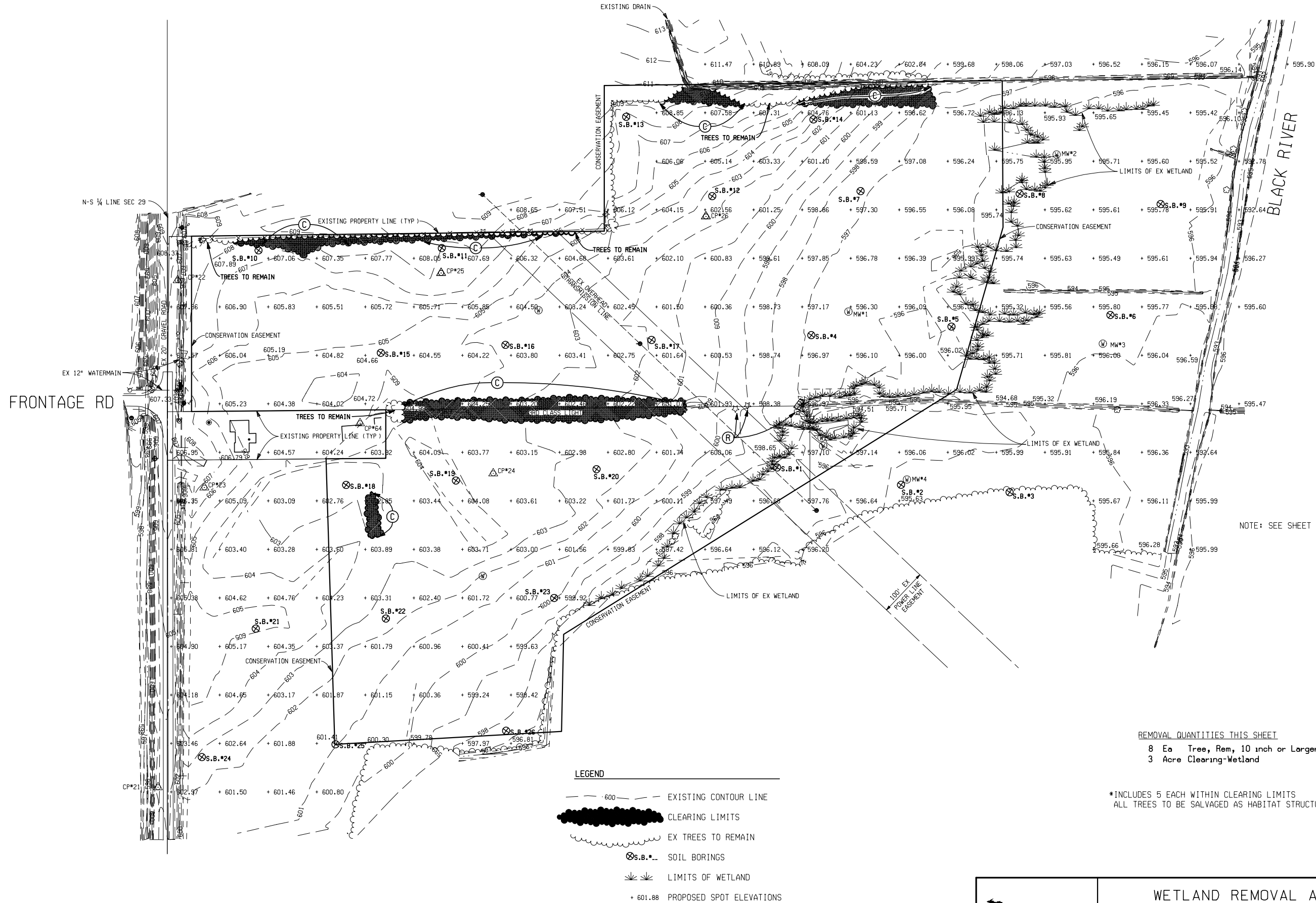
CHECKED BY:

FILE NAME:

84TH AVE

SECTION 29
T5N R14W
ZEELAND TWP

FINAL R.O.W.			
AUTH	DATE	NO.	REVISION




NOTE: SEE SHEET #12 FOR WELL LOGS FOR EX MONITORING WELLS #1-4

REMOVAL QUANTITIES THIS SHEET

- 8 Ea Tree, Rem, 10 inch or Larger*
- 3 Acre Clearing-Wetland

*INCLUDES 5 EACH WITHIN CLEARING LIMITS
ALL TREES TO BE SALVAGED AS HABITAT STRUCTURES

11-5

 Michigan Department of Transportation	WETLAND REMOVAL AND SOIL BORING SHEET					
DATE	SCALE	CONT. SEC.	JOB NO.	DESIGN UNIT	SHEET NO.	
	1"=100'				R.O.W	CONST.

DATE:

WORKED ON BY:

DATE:

CHECKED BY:

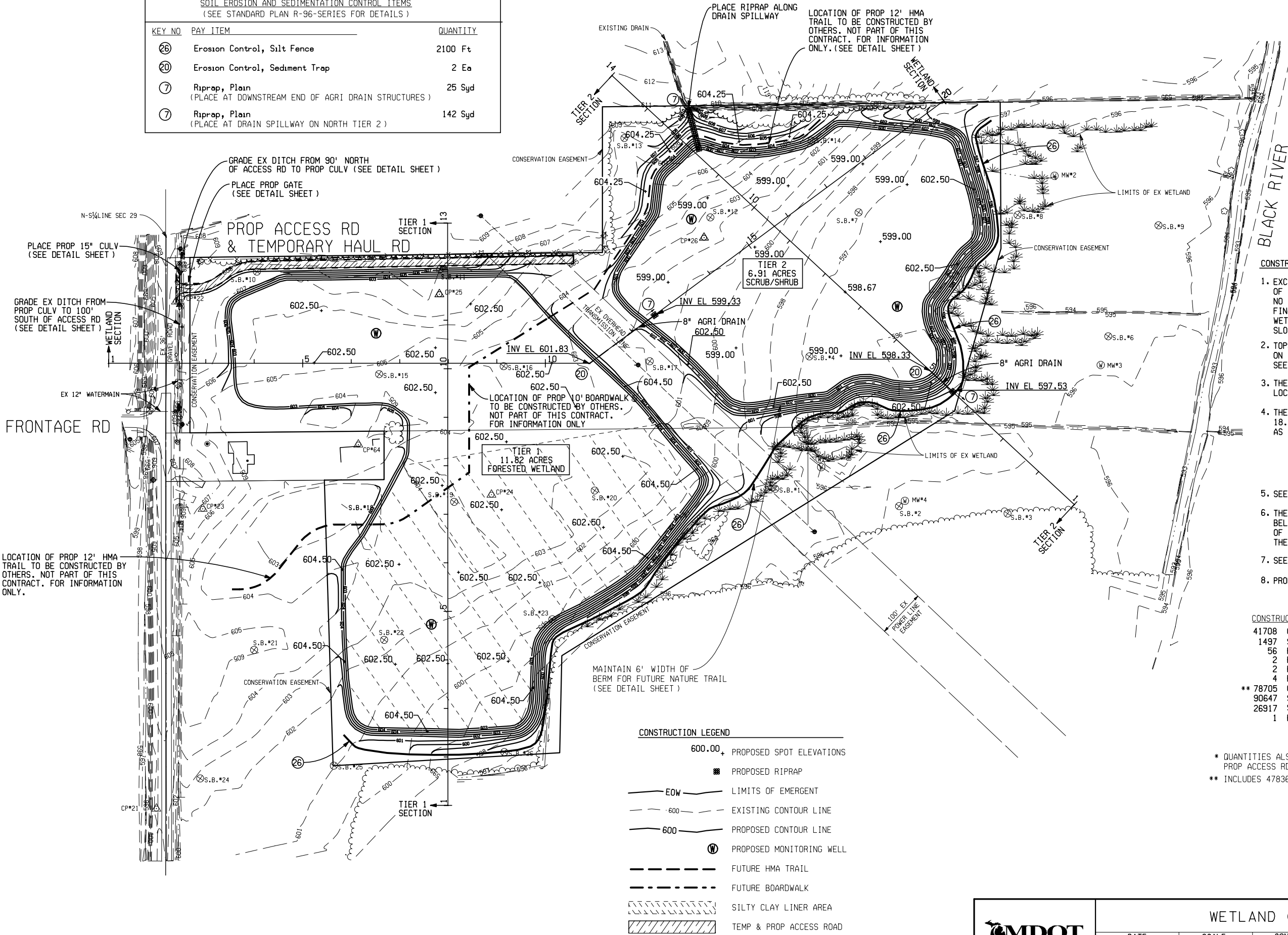
FILE NAME:

84TH AVE

SECTION 29
T5N ,R14W
ZEELAND TWP

FINAL R.O.W.			
AUTH	DATE	NO.	REVISION

SOIL EROSION AND SEDIMENTATION CONTROL ITEMS (SEE STANDARD PLAN R-96-SERIES FOR DETAILS)		
KEY NO	PAY ITEM	QUANTITY
26	Erosion Control, Silt Fence	2100 Ft
20	Erosion Control, Sediment Trap	2 Ea
7	Riprap, Plain (PLACE AT DOWNSTREAM END OF AGRI DRAIN STRUCTURES)	25 Syd
7	Riprap, Plain (PLACE AT DRAIN SPILLWAY ON NORTH TIER 2)	142 Syd



- CONSTRUCTION NOTES**
- EXCAVATION OF EARTH MATERIALS SHALL BE TO THE LIMIT OF EARTH EXCAVATION SHOWN ON THE TYPICAL CROSS SECTIONS. NO EXCESS OF EARTH EXCAVATION WILL BE ALLOWED. FINAL GRADING ANY DISTURBED AREAS OF THE PROPOSED WETLAND SITE SHALL BE LEFT ROUGH GRADED. CLASS B SLOPES WILL NOT BE REQUIRED.
 - TOPSOIL SURFACE SHALL BE PLACED TO A DEPTH AS SHOWN ON THE PLANS. ALL AREAS COVERED WITH TOPSOIL SHALL BE SEEDED AND FERTILIZED PER THE 2003 STANDARD SPECIFICATIONS.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING LOCAL PERMITS REQUIRED TO DO THIS WORK.
 - THE CONTRACTOR SHALL CONSTRUCT A TOTAL OF 18.73 ACRES OF WETLAND. THE WETLAND TYPES WILL BE AS FOLLOWS:

11.82	ACRES OF FORESTED
6.91	ACRES OF SCRUB SHRUB
18.73	TOTAL ACRES OF CREATED WETLANDS
 - SEE SHEET 9 FOR TIER 1, TIER 2 AND WETLAND CROSS SECTIONS.
 - THE TOP OF THE 6" SILTY CLAY LINER SHALL BE PLACED 12" BELOW THE PROPOSED WETLAND ELEVATION OF THE SOUTH PORTION OF TIER 1. SILTY CLAY MATERIAL SHALL BE EXCAVATED FROM THE NORTH PORTION OF TIER 1 AND TIER 2.
 - SEE DETAIL SHEET FOR BERM GRADING AND AGRI DRAIN DETAIL.
 - PROP ACCESS RD TO REMAIN AFTER CONSTRUCTION.


CONSTRUCTION QUANTITIES THIS SHEET

41708	Cyd	Embankment, CIP, Wetland*
1497	Syd	Gravel Access Road
56	Ft	Culv, CIP, 15 inch
2	Ea	Culv End Sect, 15 inch
2	Ea	Stoplog Structure
4	Ea	Monitoring Well
** 78705	Cyd	Excavation, Earth-Wetland
90647	Syd	Topsoil Surface, Salv, 12 inch, Mod*
26917	Syd	Topsoil Surface, Salv, 4 inch, Mod*
1	Ea	Gate, Special

* QUANTITIES ALSO INCLUDE QUANTITIES FOR PROP 15" CULVERT, PROP ACCESS RD AND EX DITCH REGRADING
** INCLUDES 47836 CYD OF TOPSOIL STRIPPING

CONSTRUCTION LEGEND

600.00	PROPOSED SPOT ELEVATIONS
[Symbol]	PROPOSED RIPRAP
EOW	LIMITS OF EMERGENT
- - - - -	EXISTING CONTOUR LINE
— — — — —	PROPOSED CONTOUR LINE
[Symbol]	PROPOSED MONITORING WELL
- - - - -	FUTURE HMA TRAIL
- - - - -	FUTURE BOARDWALK
[Symbol]	SILTY CLAY LINER AREA
[Symbol]	TEMP & PROP ACCESS ROAD



Michigan Department of Transportation

WETLAND CONSTRUCTION SHEET

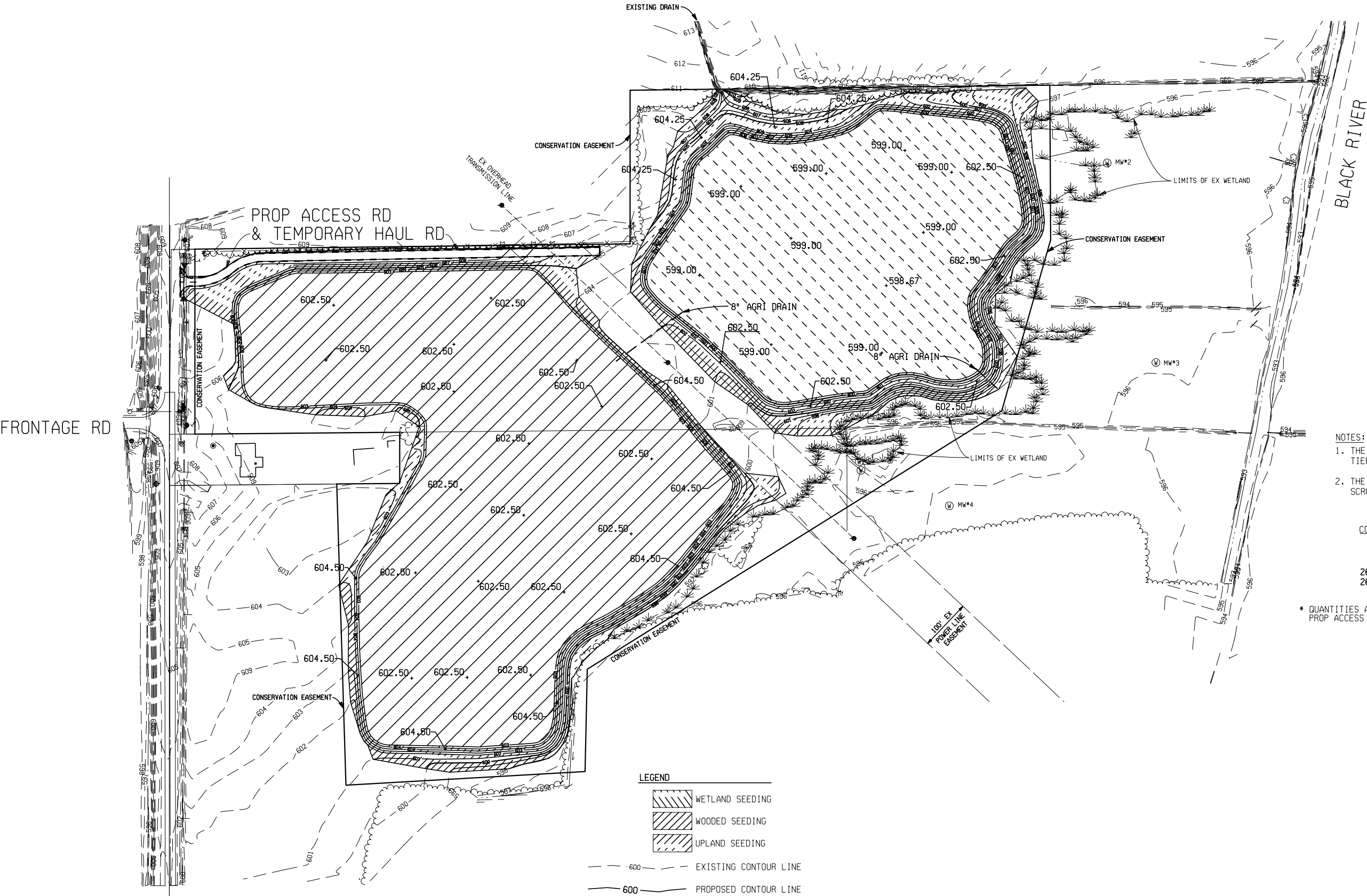
DATE	SCALE	CONT. SEC.	JOB NO.	DESIGN UNIT	SHEET NO.
	1"=100'				R.O.W. CONST.

FILE NAME:

84TH AVE

SECTION 29
T5N ,R14W
ZEELAND TWP

FINAL R.O.W.			
AUTH	DATE	NO.	REVISION



- NOTES:
1. THE WOODED WETLAND MIX SEEDING SHALL BE USED IN TIER 1.
 2. THE WETLAND SPECIAL MIX SEEDING SHALL BE USED IN THE SCRUB SHRUB AREAS OF TIER 2.

CONSTRUCTION QUANTITIES THIS SHEET		
221	Lb	Seeding, Wetland Special Mix
567	Lb	Seeding, Wooded Wetland Mix
206	Lb	Seeding, Upland Special Mix
26917	Syd	Mulch *
26917	Syd	Mulch Anchoring *

* QUANTITIES ALSO INCLUDE QUANTITIES FOR PROP 15" CULVERT, PROP ACCESS RD AND EXISTING DITCH RE-GRADING

11-7

MDOT Michigan Department of Transportation	WETLAND SEEDING SHEET				
DATE	SCALE 1"=100'	CONT. SEC.	JOB NO.	DESIGN UNIT	SHEET NO. R.O.W. CONST.

DATE:

WORKED ON BY:

DATE:

CHECKED BY:

FILE NAME:

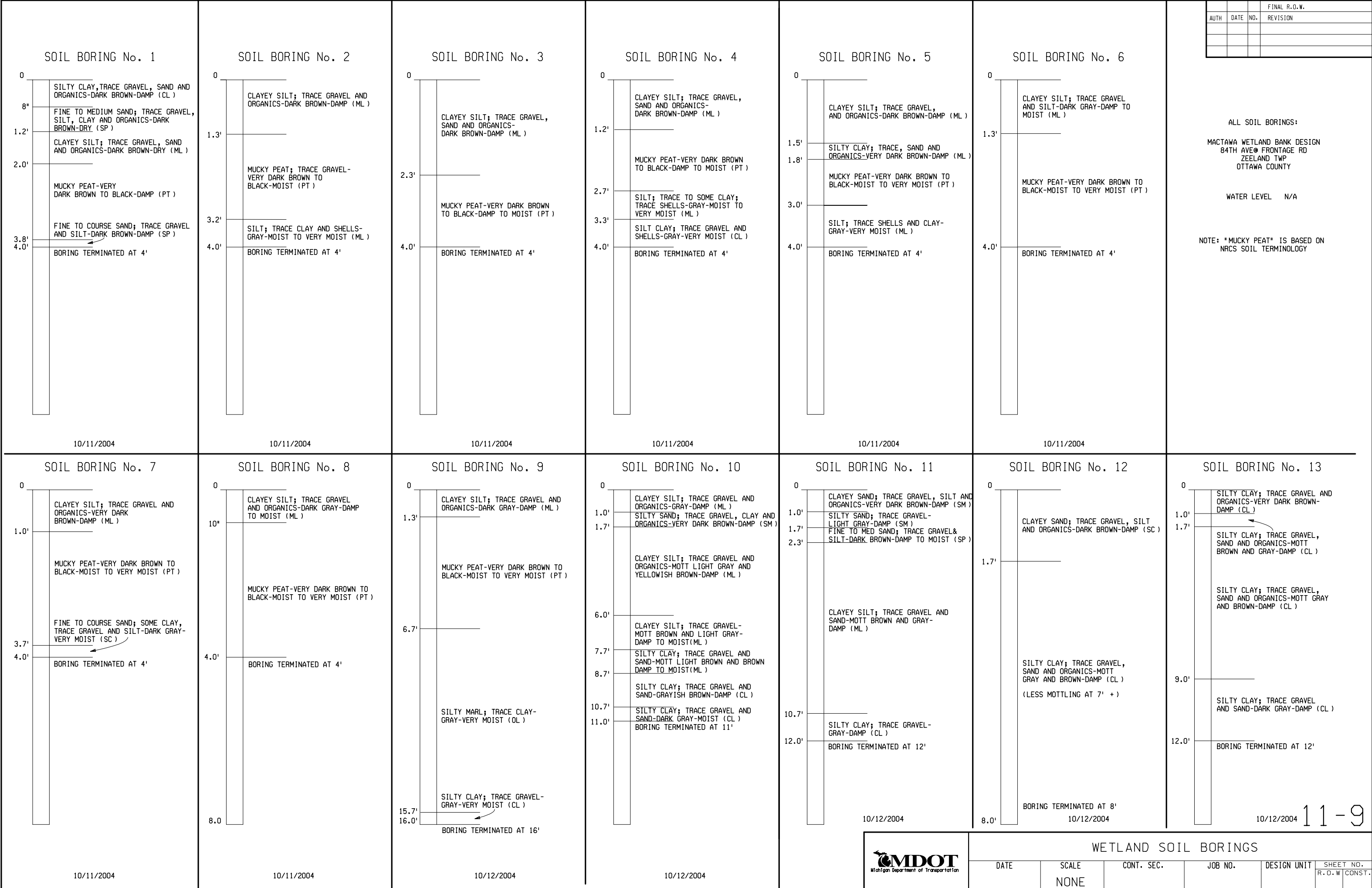


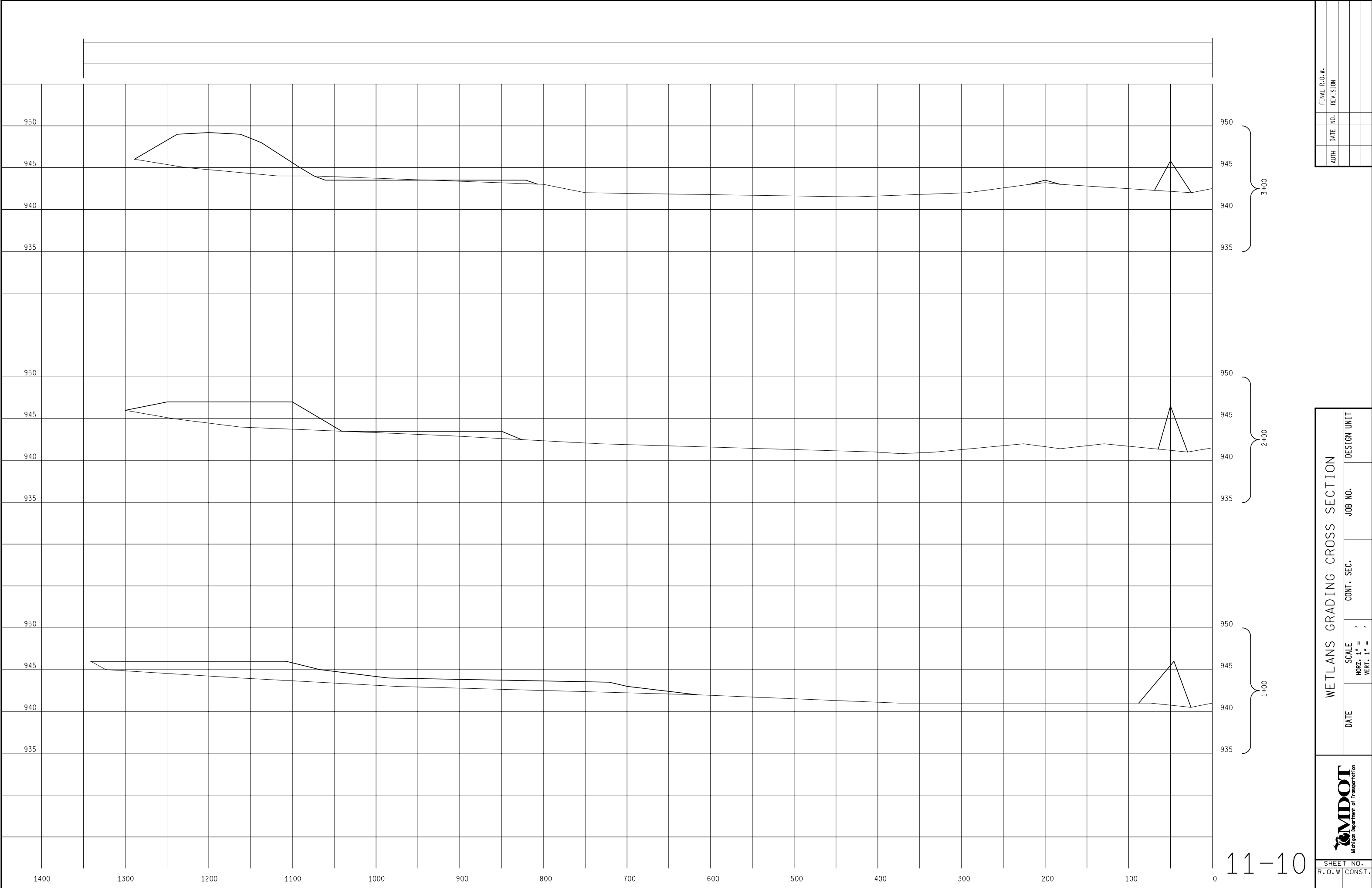
CONSTRUCTION QUANTITIES THIS SHEET

27	Ea	Habitat Structures, Log
23	Ea	Habitat Structures, Whole Tree
12	Ea	Habitat Structures, Snag

PLANT QUANTITIES THIS SHEET

QUANT	KEY	BOTANICAL NAME	COMMON NAME	SIZE
1400	2R	Acer Rubrum	Red Maple	Bareroot, 24 inch
1400	2S	Acer Saccharinum	Silver Maple	Bareroot, 24 inch
150	6R	Cornus Racemosa	Gray Dogwood	Bareroot, 18 inch
450	6S	Cornus Stolonifera	Red-Osier Dogwood	Bareroot, 18 inch
100	6C	Cephalanthus Occidentalis	Buttonbush	Bareroot, 18 inch
225	7W	Ilex Verticillata	Winterberry	Bareroot, 18 inch
150	8B	Lindera Benzion	Spicebush	Bareroot, 18 inch
1200	3P	Platanus Occidentalis	Sycamore	Bareroot, 24 inch
390	5B	Quercus Bicolor	Swamp White Oak	Bareroot, 24 inch
390	5M	Quercus Macrocarpa	Bur Oak	Bareroot, 24 inch
370	5P	Nyssa Sylvatica	Black Gum	Bareroot, 24 inch





11-10



SHEET NO.
R.O.W CONST.

WETLANDS GRADING CROSS SECTION				
DATE	SCALE HORZ. 1" = ' VERT. 1" = '	CONT. SEC.	JOB NO.	DESIGN UNIT

FINAL R.O.W.		REVISION	
AUTH	DATE	NO.	

FILE NAME:

CHECKED BY:

DATE:

WORKED ON BY:

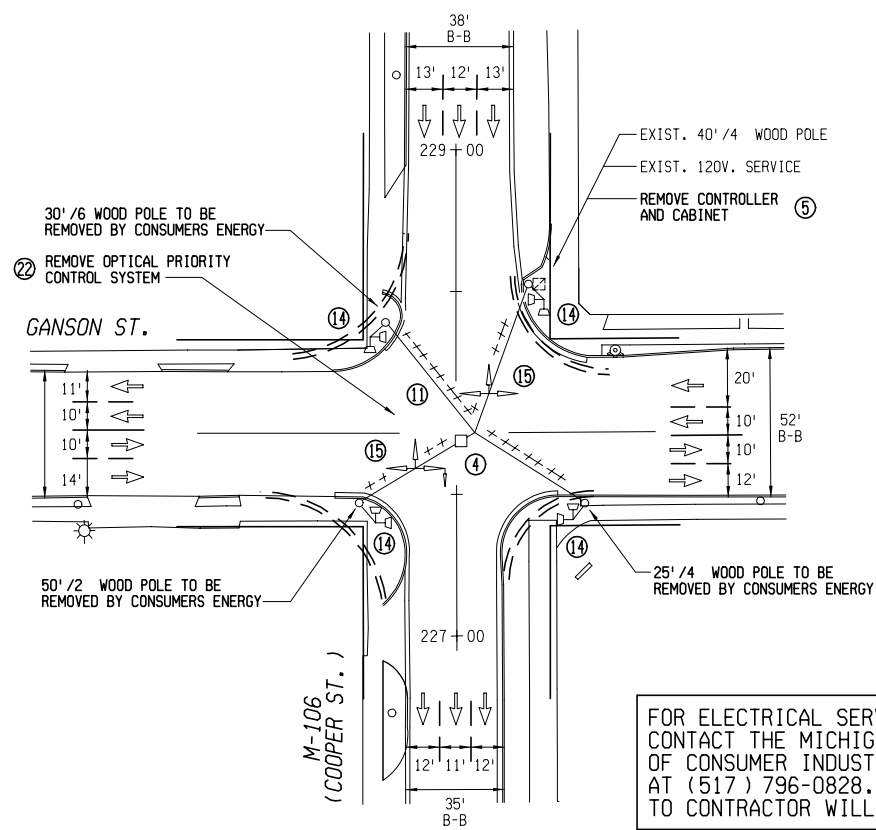
DATE:

GENERAL DESIGN GUIDELINES

- 1 PLOT BORING TEST HOLES ON PLANS. LABEL AS ⊗T.H.#__ .

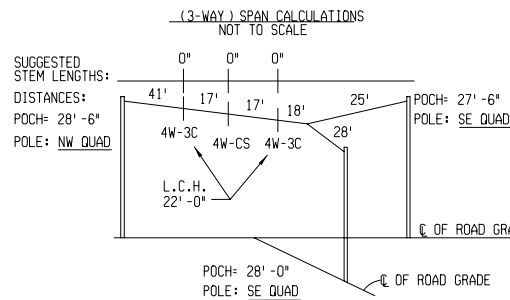
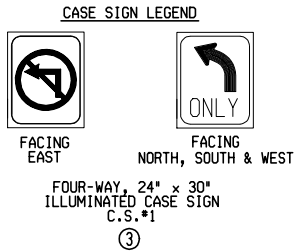
GENERAL DESIGN GUIDELINES

- 1 CONTACT TRAFFIC AND SAFETY SIGNALS UNIT FOR QUESTIONS CONCERNING SIGNAL PLANS



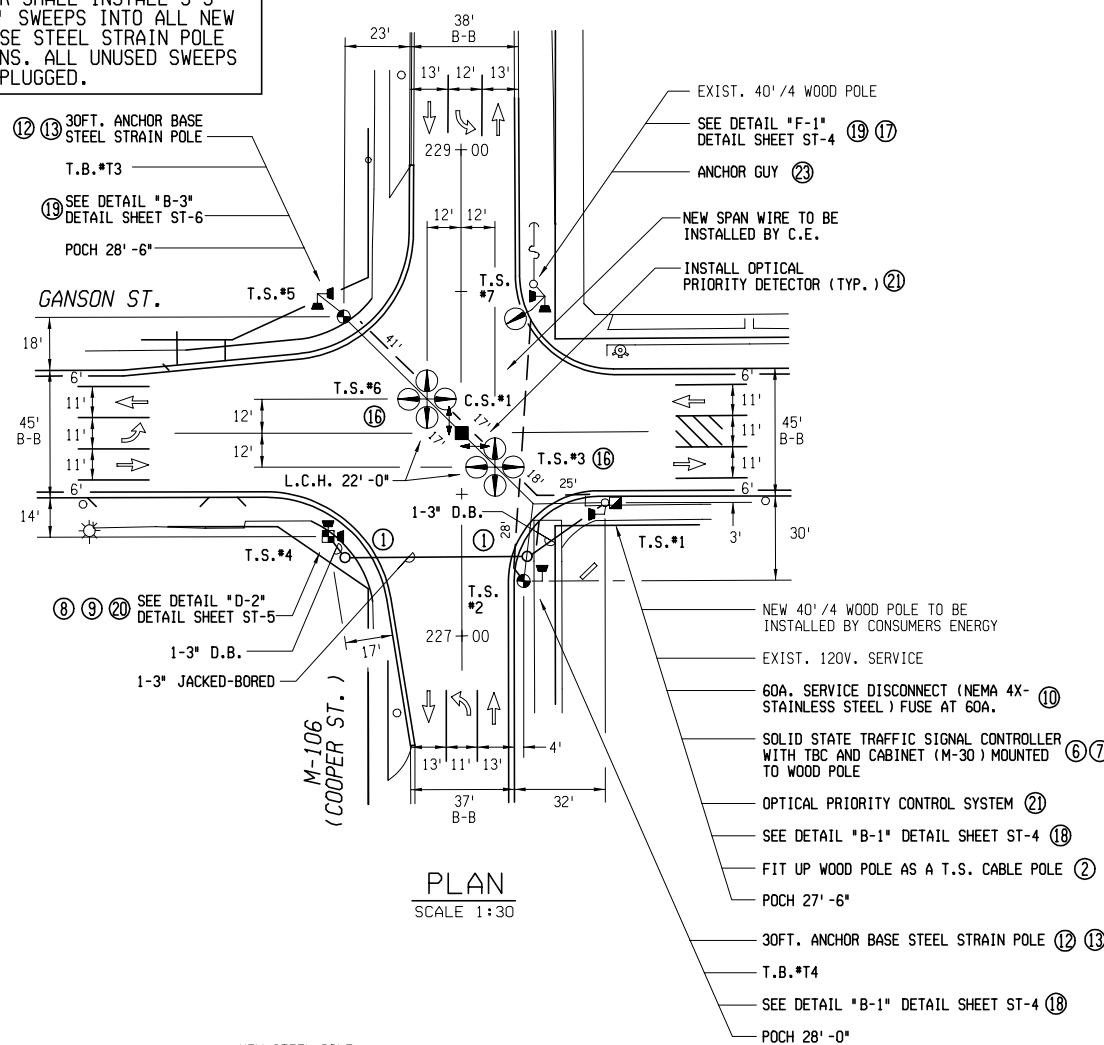
REMOVAL PLAN
SCALE 1"=30'

FOR ELECTRICAL SERVICE INSPECTION
CONTACT THE MICHIGAN DEPARTMENT
OF CONSUMER INDUSTRY & SERVICES
AT (517) 796-0828. ESTIMATED COST
TO CONTRACTOR WILL BE \$50.00.



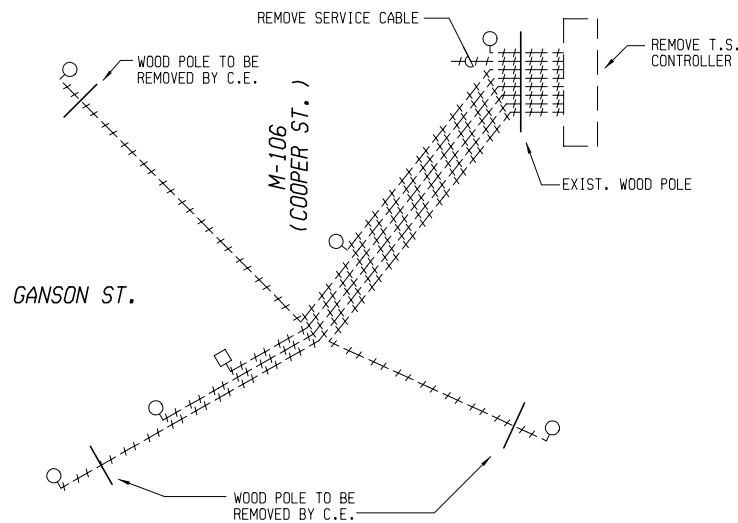
- NOTES:
1. Poch (POLE CONTACT HEIGHT) IS SHOWN ABOVE & GRADE, FIELD ADJUSTMENTS ARE TO BE MADE FOR ANY DIFFERENCE IN GRADE AT POLE VS. ROAD GRADE. Poch IS CALCULATED AT 1200 LBS. TENSION.
 2. POLE CONTACT HEIGHTS ARE SUGGESTED HEIGHTS ONLY, LOCAL POWER PROVIDER SHALL DETERMINE IF THEY MEET PROPER CLEARANCES AND OTHER STANDARDS AND PRACTICES.

CONTRACTOR SHALL INSTALL 3-3" AND 1-1/2" SWEEPS INTO ALL NEW ANCHOR BASE STEEL STRAIN POLE FOUNDATIONS. ALL UNUSED SWEEPS SHALL BE PLUGGED.



PLAN
SCALE 1"=30'

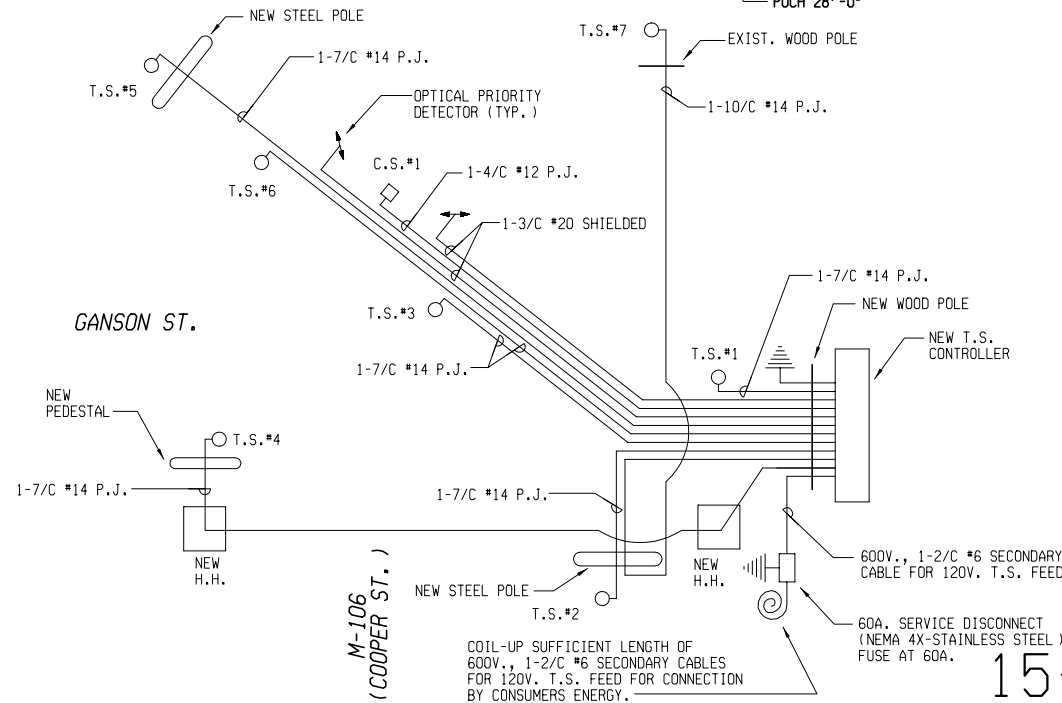
NEW SPAN WIRE, 40' / 4 WOOD POLE & 120V. SERVICE BY
CONSUMERS ENERGY. CONTACT MR. LARRY ARTHUR (517) 788-0161
EST. COST TO CONTRACTOR WILL BE \$2000.00



REMOVAL WIRING DIAGRAM

LIST OF MATERIAL		MOOT QUANTITIES	JACKSON QUANTITIES	ITEM CODE
NO.	ITEM			
1	Hh, Round	2 Ea	-- Ea	8190260
2	Wood Pole, Fit Up, TS Cable Pole	1 Ea	-- Ea	8190501
3	Case Sign, Four Way, 24 inch by 30 inch	1 Ea	-- Ea	8200013
4	Case Sign, Rem	1 Ea	-- Ea	8200020
5	Controller and Cabinet, Rem	1 Ea	-- Ea	8200030
6	Controller and Cabinet, Solid State, TBC	1 Ea	-- Ea	8200040
7	Controller and Cabinet, Solid State, TBC, Delivered	1 Ea	-- Ea	8200041
8	Pedestal, Alum	1 Ea	-- Ea	8200100
9	Pedestal, Fdn	1 Ea	-- Ea	8200105
10	Serv Disconnect	1 Ea	-- Ea	8200135
11	Span Wire, Rem	1 Ea	-- Ea	8200141
12	Strain Pole Fdn, Cased	-- Ft	24 Ft	8200150
13	Strain Pole, Steel, Anchor Base, 30 foot	-- Ea	2 Ea	8200155
14	TS, Pedestrian, Bracket Arm Mtd, Rem	4 Ea	-- Ea	8200180
15	TS, Span Wire Mtd, Rem	2 Ea	-- Ea	8200182
16	TS, Four Way Span Wire Mtd	2 Ea	-- Ea	8200207
17	TS, One Way Bracket Arm Mtd	1 Ea	-- Ea	8200220
18	TS, Pedestrian, One Way Bracket Arm Mtd	2 Ea	-- Ea	8200225
19	TS, Pedestrian, Two Way Bracket Arm Mtd	2 Ea	-- Ea	8200227
20	TS, Pedestrian, Two Way Pedestal Mtd	1 Ea	-- Ea	8200237
21	Optical Priority Control System	-- Ea	1 Ea	8207050
22	Optical Priority Control System, Rem	-- Ea	1 Ea	8207050
23	Anchor Guy	1 Ea	-- Ea	8200001
24	Conduit, DB, 1, 3 inch	40 Ft	-- Ft	8190029
25	Conduit, Jacked Bored	65 Ft	-- Ft	8190135

* PHASE SELECTOR SHALL BE MODEL 452 AND DETECTORS SHALL BE MODEL 721 (OR APPROVED EQUAL.)



WIRING DIAGRAM

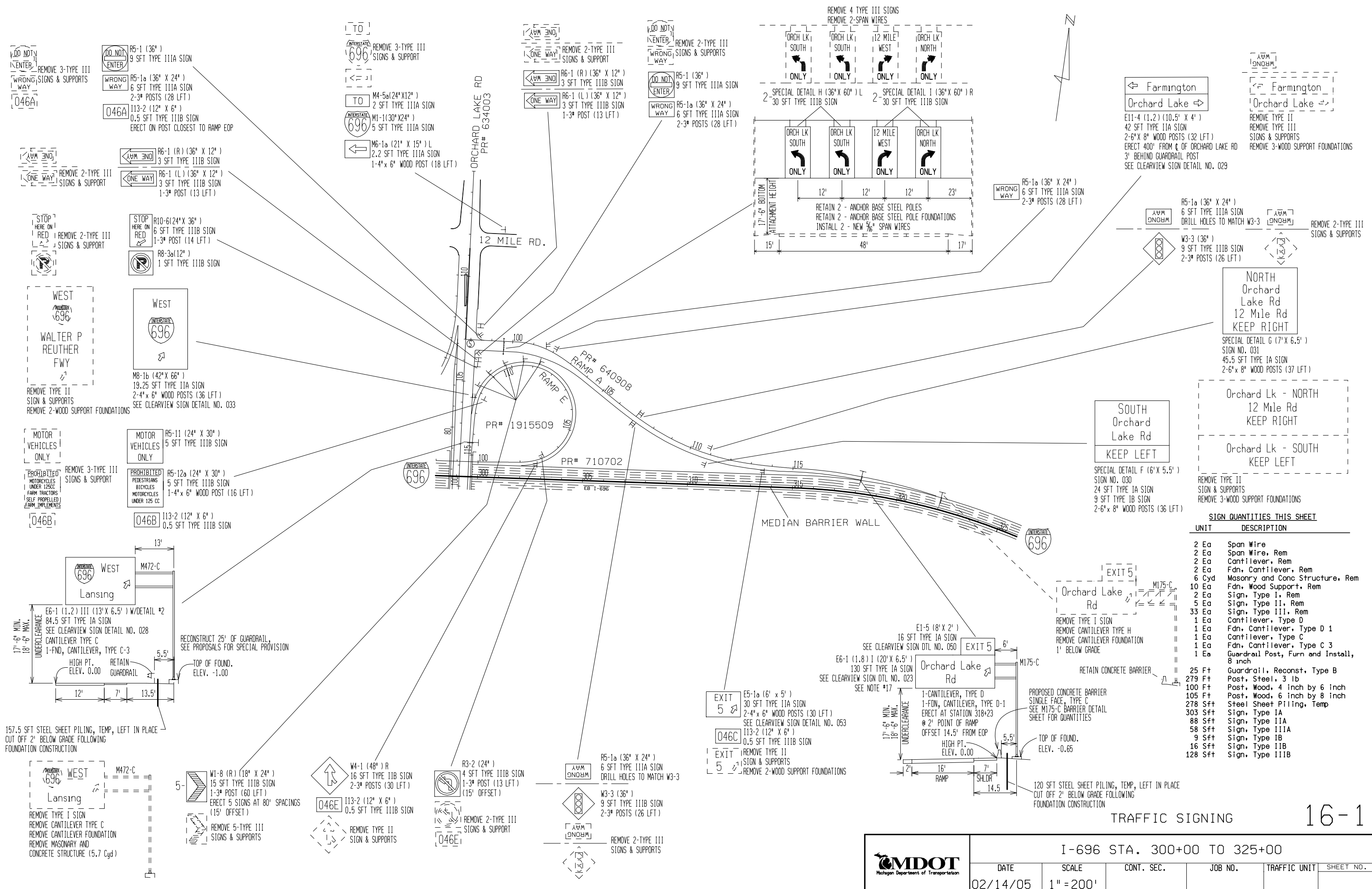
CONTROL SECTION	JOB NUMBER	FEDERAL NUMBERS		AUTH. NO.	DRAWN	DATE	SCALE	SHEET	OF	PLAN	M-106 (COOPER) AT GANSON CITY OF JACKSON JACKSON COUNTY	CONST SHEET NO.
		PROJECT	ITEM									
NHG 38051	74578A					5-15-03	1"=30'	5	41	38051-01-003		61

CYCLIC WATTS 5650
STEADY WATTS 275

15-1

GENERAL DESIGN GUIDELINES

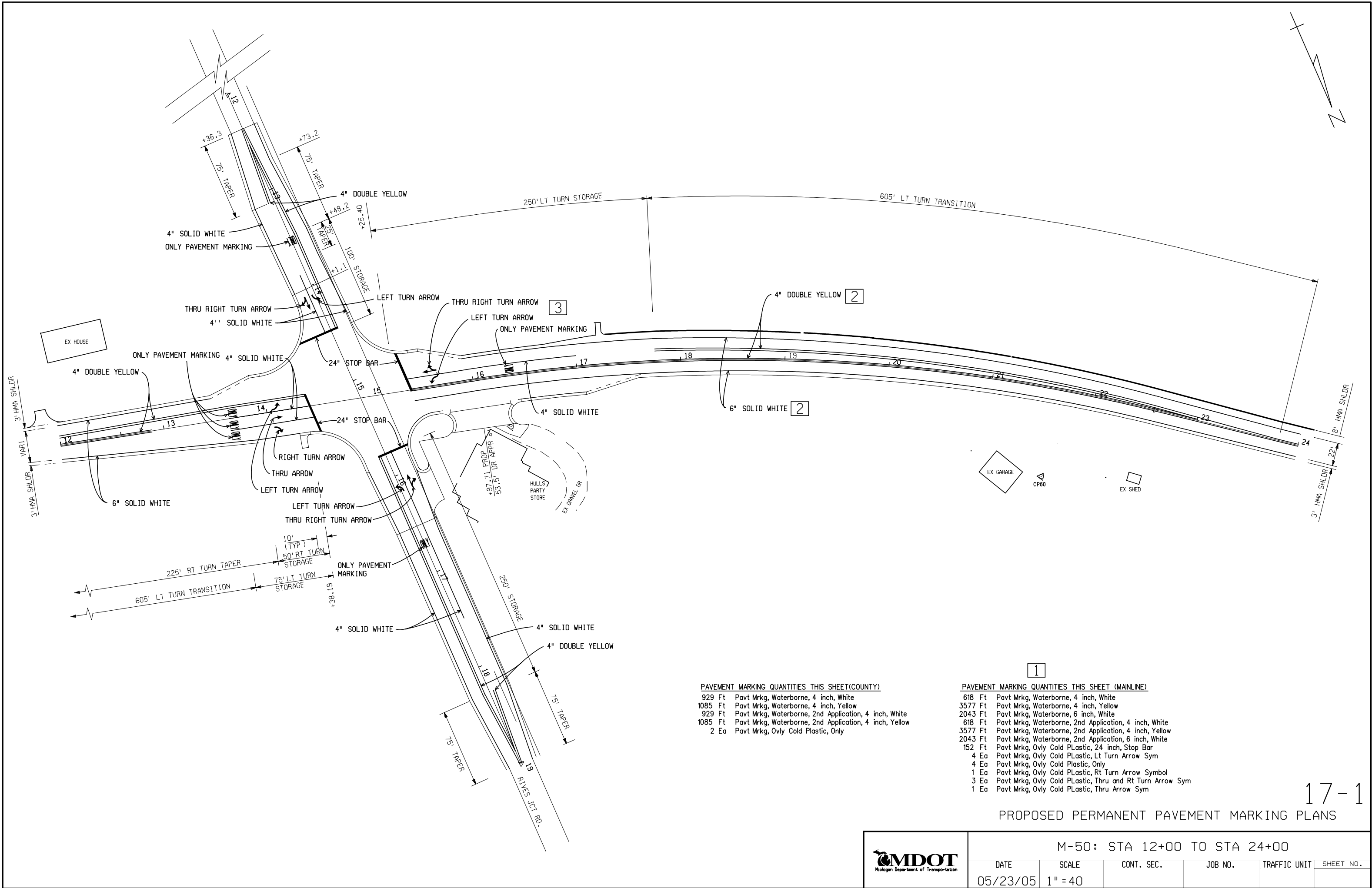
1 CONTACT TRAFFIC & SAFETY SIGNING AREA FOR QUESTIONS CONCERNING SIGNING PLANS.



SIGN QUANTITIES THIS SHEET	
UNIT	DESCRIPTION
2 Ea	Span Wire
2 Ea	Span Wire, Rem
2 Ea	Cantilever, Rem
2 Ea	Fdn, Cantilever, Rem
6 Cyd	Masonry and Conc Structure, Rem
10 Ea	Fdn, Wood Support, Rem
2 Ea	Sign, Type I, Rem
5 Ea	Sign, Type II, Rem
33 Ea	Sign, Type III, Rem
1 Ea	Cantilever, Type D
1 Ea	Fdn, Cantilever, Type D 1
1 Ea	Cantilever, Type C
1 Ea	Fdn, Cantilever, Type C 3
1 Ea	Guardrail Post, Furn and Install, 8 inch
25 Ft	Guardrail, Reconst, Type B
279 Ft	Post, Steel, 3 lb
100 Ft	Post, Wood, 4 inch by 6 inch
105 Ft	Post, Wood, 6 inch by 8 inch
278 Sft	Steel Sheet Piling, Temp
303 Sft	Sign, Type IA
88 Sft	Sign, Type IIA
58 Sft	Sign, Type IIIA
9 Sft	Sign, Type IB
16 Sft	Sign, Type IIB
128 Sft	Sign, Type IIIB

DESIGN GUIDELINES

- 1 PLACE PAVEMENT MARKING QUANTITIES PER SHEET OR PLACE TOTAL PAVEMENT MARKING QUANTITIES ON THE FIRST PAVEMENT MARKING SHEET.
- 2 LABEL PAINT LINES
- 3 LABEL SPECIAL MARKINGS




PAVEMENT MARKING QUANTITIES THIS SHEET (COUNTY)

929 Ft	Pavt Mrkg, Waterborne, 4 inch, White
1085 Ft	Pavt Mrkg, Waterborne, 4 inch, Yellow
929 Ft	Pavt Mrkg, Waterborne, 2nd Application, 4 inch, White
1085 Ft	Pavt Mrkg, Waterborne, 2nd Application, 4 inch, Yellow
2 Ea	Pavt Mrkg, Ovly Cold Plastic, Only

PAVEMENT MARKING QUANTITIES THIS SHEET (MAINLINE)

618 Ft	Pavt Mrkg, Waterborne, 4 inch, White
3577 Ft	Pavt Mrkg, Waterborne, 4 inch, Yellow
2043 Ft	Pavt Mrkg, Waterborne, 6 inch, White
618 Ft	Pavt Mrkg, Waterborne, 2nd Application, 4 inch, White
3577 Ft	Pavt Mrkg, Waterborne, 2nd Application, 4 inch, Yellow
2043 Ft	Pavt Mrkg, Waterborne, 2nd Application, 6 inch, White
152 Ft	Pavt Mrkg, Ovly Cold PLastic, 24 inch, Stop Bar
4 Ea	Pavt Mrkg, Ovly Cold PLastic, Lt Turn Arrow Sym
4 Ea	Pavt Mrkg, Ovly Cold Plastic, Only
1 Ea	Pavt Mrkg, Ovly Cold PLastic, Rt Turn Arrow Symbol
3 Ea	Pavt Mrkg, Ovly Cold PLastic, Thru and Rt Turn Arrow Sym
1 Ea	Pavt Mrkg, Ovly Cold PLastic, Thru Arrow Sym

17-1
PROPOSED PERMANENT PAVEMENT MARKING PLANS

		M-50: STA 12+00 TO STA 24+00				
DATE	SCALE	CONT. SEC.	JOB NO.	TRAFFIC UNIT	SHEET NO.	
05/23/05	1" = 40'					

FILE NAME: 38073con12.tss
CHECKED BY: DATE: WORKED ON BY: DATE:

GENERAL DESIGN GUIDELINES

PAGE 18-1

- 1 SITUATION PLAN
- 2 ROAD PROFILE
- 3 CROSS SECTION
- 4 SOIL BORING INFORMATION
- 5 HYDRAULIC DATA

PAGE 18-2

- 1 LONGITUDINAL CROSS SECTION
- 2 CROSS SECTION - WITH EXCAVATION AND BACKFILL DETAILS
- 3 CULVERT WRAP DETAIL
- 4 NOTES AND QUANTITIES

PAGE 18-3

- 1 CONCRETE TABLE
- 2 STEEL TABLE
- 3 END DETAILS

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

SECTION 17
T37N,R26W
VILLAGE OF CARNEY

CONTRACTOR TO FIELD VERIFY
ALL UTILITY LOCATION AND DEPTHS

B.M.*101 ELEV. 797.780

RR SPIKE IN WEST FACE OF POWER POLE
95.0' RT OF ∇ STATION 832+75

B.M.*100 ELEV. 796.110

RR SPIKE IN WEST FACE OF POWER POLE
94.6' RT OF ∇ STATION 829+83

EX UP COMMUNICATIONS CABLE TV
CAUTION - CRITICAL
UNDERGROUND UTILITY

EX MULTIPLE UP TELEPHONE
COPPER TELEPHONE LINES
CAUTION - CRITICAL
UNDERGROUND UTILITY

EX DTE 4" STEEL GAS LINE
HAZARDOUS OR
FLAMMABLE MATERIAL

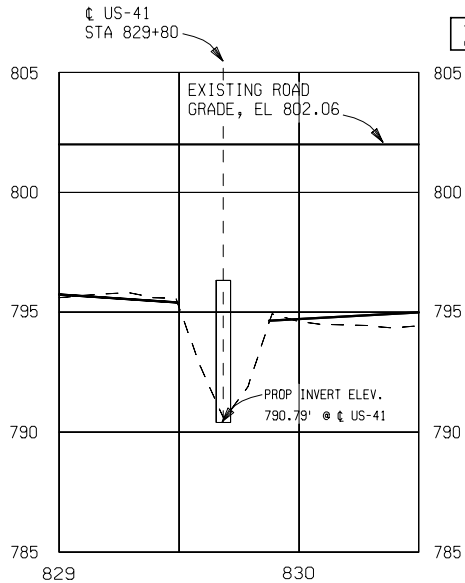
REL-B/D

ROW FOR CONSTRUCTING
AND MAINTAINING OUTLET DITCH

CAUTION - CRITICAL
UNDERGROUND UTILITY
EX MULTIPLE UP TELEPHONE
COPPER TELEPHONE LINES
& OLD SBC TOLL CABLE

SITUATION PLAN

NOT TO SCALE



∇ US-41 PROFILE

VERT. SCALE-1"=4'
HOR. SCALE-1"=40'

SECTION 18
T37N,R26W
VILLAGE OF CARNEY

SOIL EROSION AND SEDIMENTATION CONTROL ITEMS

- 7 SPECIAL RIPRAP W/GEOTEXTILE LINER
- 26 SILT FENCE
- 24 SAND BAGS
- 20 SEDIMENT TRAP
- 37 CHECK DAM
- 55 FILTER BAG

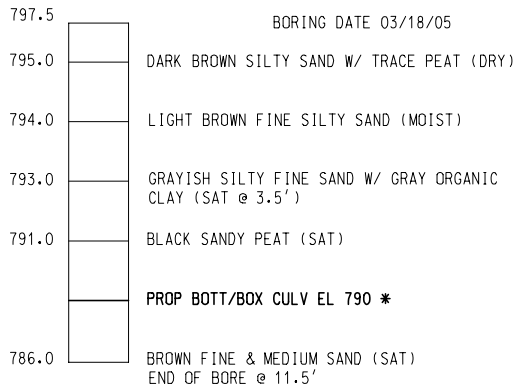
THE CONTRACTOR SHALL SUBMIT A CONSTRUCTION PLAN, FOR DEWATERING AND MAINTAINING STREAM FLOW, TO THE ENGINEER AT LEAST 14 DAYS PRIOR TO BEGINNING THE WORK. THE PLAN MUST BE APPROVED PRIOR TO PERFORMING ANY WORK ON THE CULVERT. PAYMENT FOR ALL ITEMS USED FOR DEWATERING AND MAINTAINING FLOW DURING CONSTRUCTION SHALL BE INCLUDED IN THE PAYMENT FOR THE CULVERT. OTHER SEDIMENTATION AND EROSION CONTROL ITEMS WILL BE PAID FOR SEPARATELY AS INDICATED IN THE MISCELLANEOUS QUANTITIES.

RIPPRAP, SILT FENCE, STONE BAGS, SEDIMENT TRAP, AND CHECK DAM SHALL BE PLACED AS DIRECTED BY THE ENGINEER.

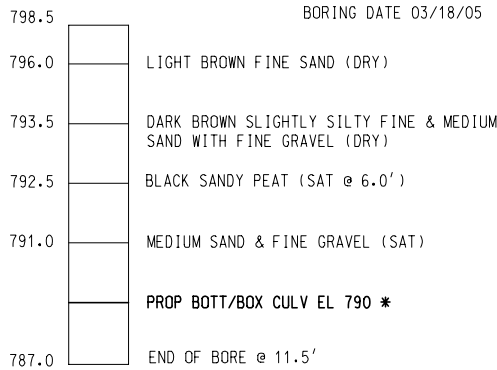
UPON CONSTRUCTION OF CULVERT END SECTIONS, THE CONTRACTOR SHALL IMMEDIATELY INSTALL SILT FENCE IN EACH QUADRANT OF THE CULVERT. AT THE END OF EACH WORK DAY, SILT FENCE MUST BE INSTALLED AT ALL QUADRANTS HAVING EARTH DISTURBANCES.

4 SOIL BORING INFORMATION

TEST HOLE NO. 01
LOCATION STATION: 830+00.0 W OF CENTERLINE, 45.0 FT
US-41 - GROUND SURFACE EL 797.5



TEST HOLE NO. 02
LOCATION STATION: 830+00.0 E OF CENTERLINE, 42.0 FT
US-41 - GROUND SURFACE EL 798.5



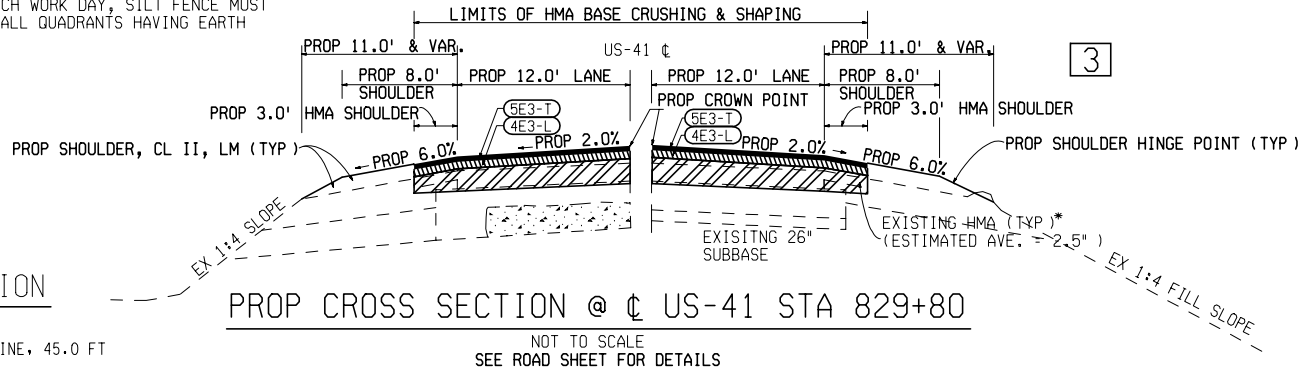
HYDRAULIC INFORMATION

DRAINAGE AREA = 2.6 sqm
DISCHARGE 50 YEAR = 130 cfs
DISCHARGE 100 YEAR = 170 cfs

HYDRAULIC INFORMATION

	EXISTING	PROPOSED	CHANGE
CULVERT TYPE	Concrete Slab	Concrete Box	CULVERT TYPE
SPAN	8 ft	10 ft	2 ft
RISE	4 ft	6 ft	2 ft
LENGTH	82 ft	108 ft	26 ft
ENTRANCE TYPE	Sq. Headwall	Wingwall	
U/S INVERT EL	N/A	790.80 ft	
D/S INVERT EL	N/A	790.78 ft	
50-YEAR			
VELOCITY AT OUTLET	6.8 ft/s	7.0 ft/s	-0.73 ft
HEADWATER	796.25 ft	795.52 ft	
100-YEAR			
VELOCITY AT OUTLET	7.7 ft/s	7.8 ft/s	- 0.42 ft
HEADWATER	796.48 ft	796.06 ft	
	Ke = 0.5	Ke = 0.4	

50-YEAR AND 100-YEAR ELEVATIONS ARE FOR COMPARISON ONLY



CHANNEL CROSS-SECTION

50.0' DOWNSTREAM FROM EXISTING HEADWALL
VERT. SCALE-1"=1'
HOR. SCALE-1"=10'

10' X 6' BOX CULVERT

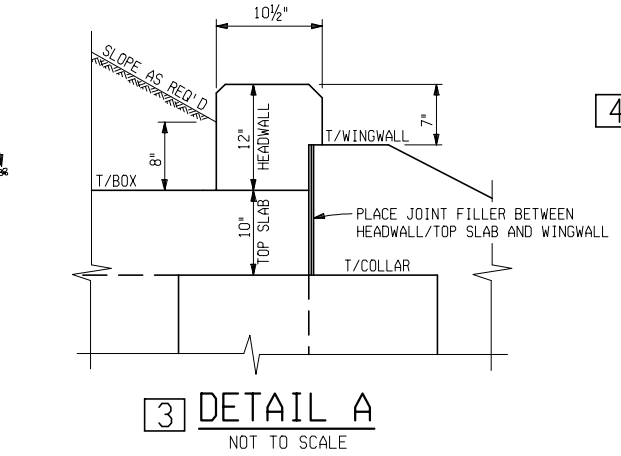
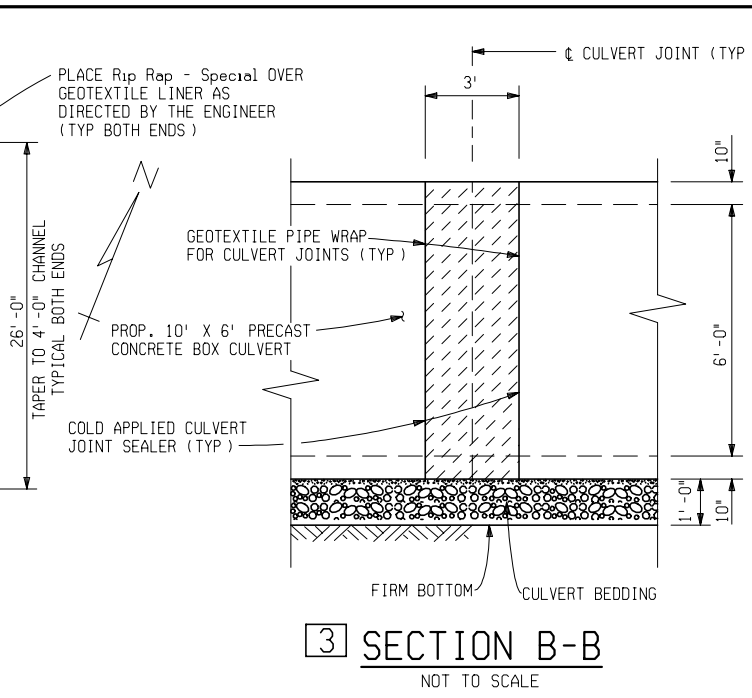
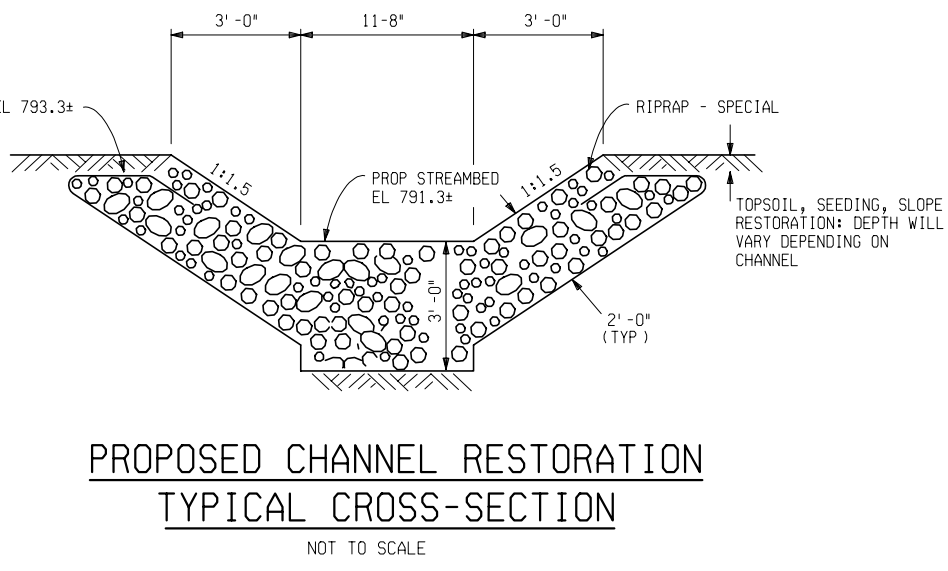
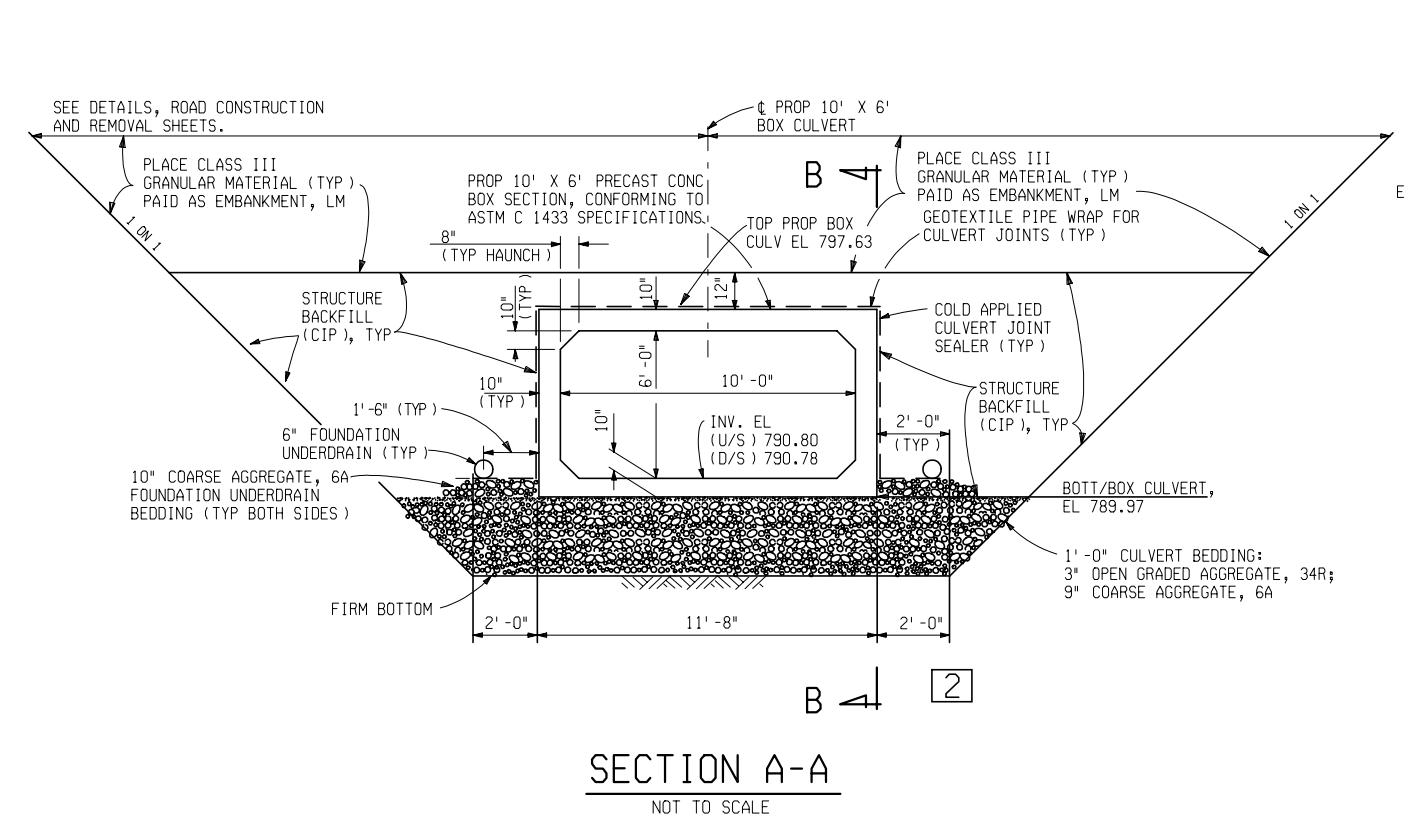
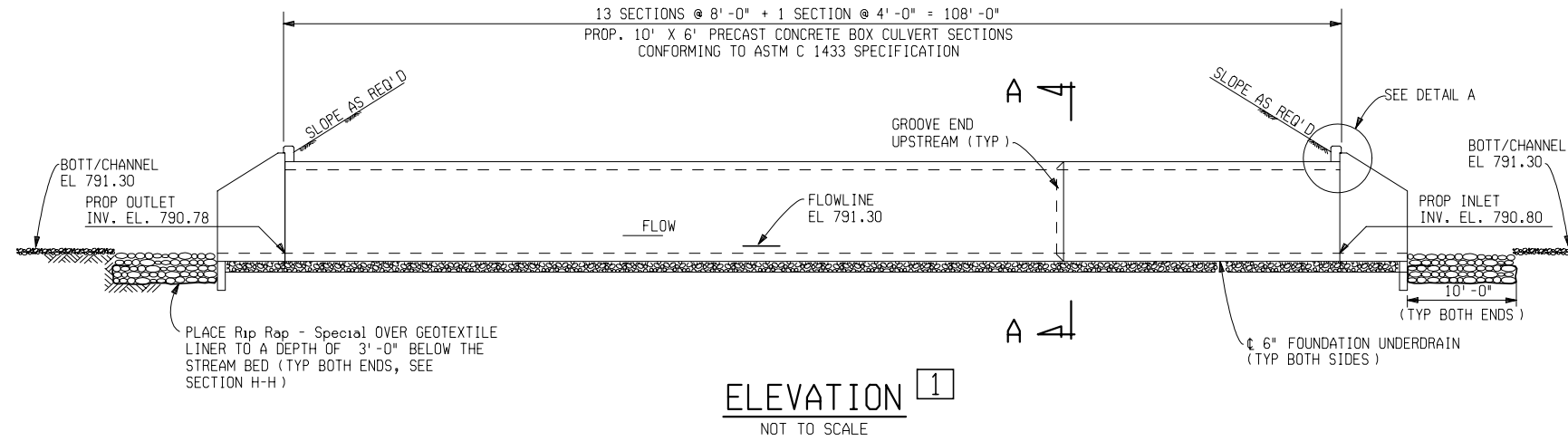
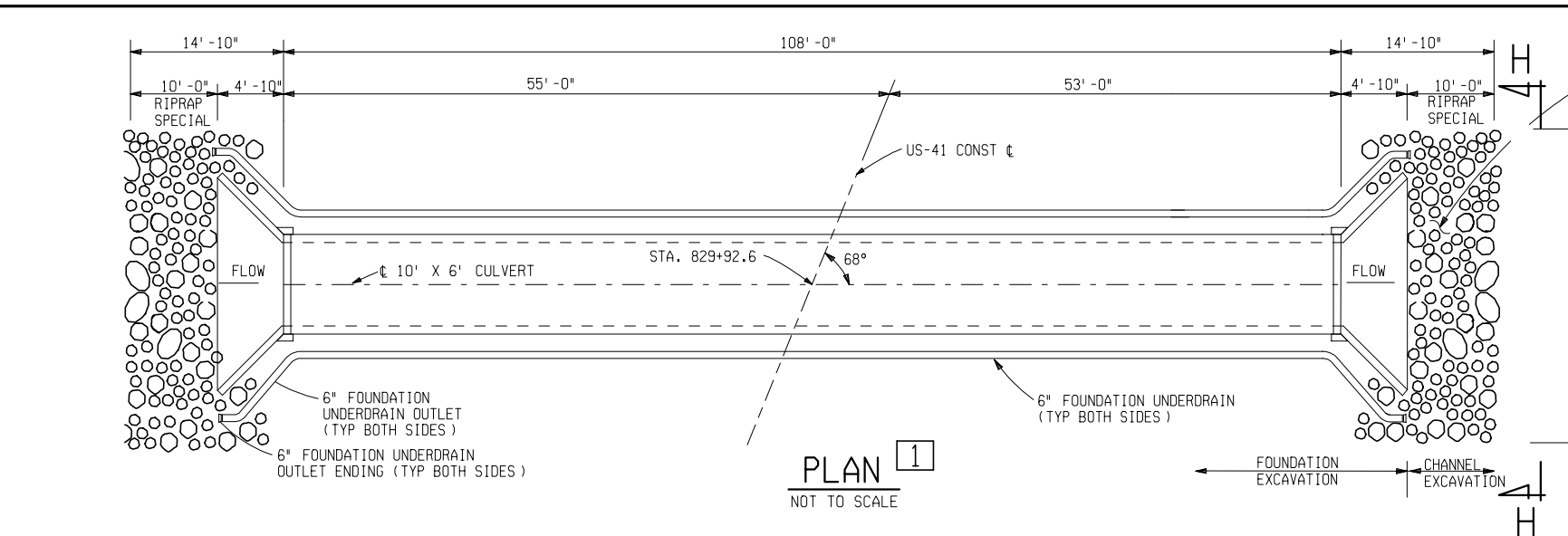
US-41 STA 829+80



DATE	SCALE	CONT. SEC.	JOB NO.	DESIGN UNIT	SHEET NO.
12/11/03	AS NOTED	55012	80177A	URDA	25

18-1

1 2 3 9 11 12 13 14 15 16 17 18 19 21 22 24 25 26 27 28 30 31 32 33



FINAL R.O.W.			
AUTH	DATE	NO.	REVISION
FOR INFORMATION ONLY			
1200 Sft	Geotextile Pipe Wrap for Culvert Joints		
1200 Sft	Cold Applied Culvert Joint Sealer		
72 Cyd	Coarse Aggregate 6A (CULV BEDDING)		
19 Cyd	Open Graded Aggregate, 34R (CULV BEDDING)		
24 Sft	1 inch Joint Filler		
72 Ea	Inserts for 3/4" Dia Threaded Bars		
MISCELLANEOUS QUANTITIES			
1 LS	Structures, Rem		
108 Ft	Culv, Precast Conc Box, 10 foot by 6 foot		
91 Cyd	Culv Bedding, Box Culv		
380 Cyd	Excavation, Fdn		
65 Cyd	Excavation, Channel		
320 Cyd	Excavation, Peat		
670 Cyd	Backfill, Structure, CIP		
100 Cyd	Embankment, LM		
216 Ft	Underdrain, Fdn, 6 inch		
28 Ft	Underdrain Outlet, 6 inch		
4 Ea	Underdrain, Outlet Ending, 6 inch		
210 Sft	Joint Waterproofing		
16 Cyd	Conc, Grade S2		
1557 Lb	Reinforcement, Steel, Culv and Headwall		
60 Syd	Riprap-Special		
400 Ft	Erosion Control, Silt Fence		
400 Ea	Erosion Control, Sand Bags		
30 Ft	Erosion Control, Check Dam, Stone		
1 Ea	Erosion Control, Filter Bag		
1 Ea	Erosion Control, Sediment Trap		
50 Cyd	Erosion Control, Maintenance, Sediment Removal		

4 NOTES:

THE WORK COVERED BY THESE PLANS INCLUDES INSTALLATION AND MAINTENANCE OF EROSION AND SEDIMENTATION CONTROLS, DEWATERING AND MAINTAINING FLOW, REMOVAL OF EXISTING 10' X 6' CULVERT AND HEADWALLS, INSTALLATION OF THE PROPOSED PRECAST CONCRETE BOX CULVERT, CONSTRUCTION OF THE CAST-IN-PLACE END SECTIONS, CHANNEL RELOCATION, PLACING GEOTEXTILE LINER AND RIPRAP, SLOPE RESTORATION, AND OTHER ITEMS NECESSARY TO COMPLETE THE WORK AS SHOWN.

WATER LEVEL IS SUBJECT TO CHANGE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATION OF WATER LEVELS THAT WILL EXIST DURING CONSTRUCTION. DEWATERING AND MAINTAINING FLOW WILL NOT BE PAID FOR SEPARATELY, BUT WILL BE INCLUDED IN THE COST PER FOOT OF "Culv, Precast Conc Box, 10 foot by 6 foot."

FURNISHING AND PLACING THE GEOTEXTILE LINER IS INCLUDED IN THE COST FOR "Riprap-Special."

THE ENTIRE AREA OF EXCAVATION AROUND THE CULVERT SHALL BE BACKFILLED WITH STRUCTURE BACKFILL. THE PAY AREA SHALL START AT THE TOP OF CULVERT BEDDING AND EXTEND TO ONE FOOT ABOVE THE LEVEL OF THE TOP OF THE BOX CULVERT. THE AGGREGATE 6A CULVERT BEDDING SHALL BE 100 PERCENT CRUSHED. EMBANKMENT SHALL BE PLACED ABOVE THE STRUCTURE BACKFILL TO PROPOSED GRADE OR PROPOSED AGGREGATE BASE.

CULVERT BEDDING SHALL BE PLACED BELOW THE APRON DOWN TO THE BOTTOM OF THE EXCAVATION.

JOINT FILLER IS INCLUDED IN THE PAY ITEM "Conc, Grade S2."

THREADED BARS SHALL BE INSERTED IN DAYTON SUPERIOR 3/4" DIA. TYPE B-16, RICHMOND 3/4" DIA. TYPE L, OR EQUAL. "Inserts for 3/4" Dia Threaded Bars" WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE PAY ITEM "Culv, Precast Conc Box, 10 foot by 6 foot."

EXPOSED EDGES OF CONCRETE SHALL BE BEVELED 3/4" MINIMUM, EXCEPT WHERE NOTED.

CIP DENOTES CAST-IN-PLACE OR COMPACTED-IN-PLACE.
ES DENOTES EACH SIDE.
FS DENOTES FAR SIDE.
NS DENOTES NEAR SIDE.

THE GRADES AND STRESSES OF CONCRETE AND STEEL REINFORCEMENT USED IN THIS CULVERT EXTENSION SHALL BE AS FOLLOWS:

STEEL REINFORCEMENT (GRADE 60) $f_y = 60,000$ psi
CONCRETE GRADE S2 $f'_c = 3,500$ psi

DAMAGE TO THE STEEL REINFORCEMENT EPOXY COATING SHALL BE REPAIRED ACCORDING TO SUBSECTION 706.03.E.8.

THE MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2003 STANDARD SPECIFICATIONS FOR CONSTRUCTION.

10' X 6' BOX CULVERT DETAILS

WORKED ON BY: SUTPHEN DATE: 06/06/05
PROPOSED BY: T. SUTPHEN DATE: 06/03/05
CHECKED BY: B.K. SINGH DATE: 6/1/05
FILE NAME: 80177BOX10X6.dgn

2

REINFORCEMENT, STEEL			
ONE END ONLY			
HEADWALL	BAR	NO. REQ'D	TOTAL WEIGHT
	EA041102	4	29.8
	EK040205	8	12.9
	EB060103	11	20.7
COLLAR	EA060507	8	67.1
	EA040202	16	23.2
	EA040208	16	28.5
	EB060103	14	26.3
APRON	EB060103	11	20.7
	EA061109	1	17.6
	EA061301	1	19.7
	EA061405	1	21.7
	EA061509	1	23.7
	EA061701	2	51.3
	EA060206	2	7.5
	EA060306	2	10.5
	EA060404	15	97.6
WINGWALLS	EA060606	2	19.5
	EA060608	2	20.0
	EA060403	2	12.8
	EA060503	2	15.8
	EA060606	12	117.2
	EB060808	2	26.0
	EB060802	2	24.5
	EB060707	2	22.8
	EB060702	2	21.5
EB060607	2	19.8	
TOTAL		779 Lbs	

CONCRETE-GRADE S2 QUANTITIES		
LOCATION	POUR	ONE END ONLY
COLLARS	A	1.0
HEADWALL	B	0.4
APRON	C	2.4
WINGWALLS	D	2.4
CURTAINWALL	E	1.5
TOTAL ONE END		8 Cyd

3"

12"

2 3/4" THREADS

EB060103

THREADED BAR
INCLUDED IN BID ITEM
"Reinforcement, Steel,
Epoxy Coated."

EK040205

10' X 6' BOX CULVERT DETAILS

18-3



NOT TO SCALE
DETAIL SHOWING CONNECTING COLLAR STEEL
NOTE: COLLAR IS POUR A



NOT TO SCALE



NOT TO SCALE

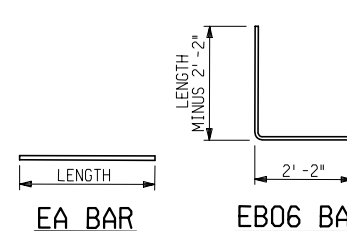
SHOWING INSERT LOCATIONS FOR 3/4" THREADED BARS (E8060103).
INSERTS FOR 3/4" THREADED BARS SHALL BE FABRICATOR INSTALLED;
AND ARE INCLUDED IN THE BID ITEM "Culv, Precast Conc Box,
10 foot by 6 foot."



NOT TO SCALE



NOT TO SCALE



Michigan Department of Transportation

US-41 STA 829+80

DATE	SCALE	CONT. SEC.	JOB NO.	DESIGN UNIT	SHEET NO.	
					R.O.W	CONST
10/09/04	NO SCALE	55012	80177A	URDA		28

GENERAL DESIGN GUIDELINES

PAGE 21-1 - STREET LIGHTING ALTERATIONS

- 1 SHOW PROPOSED LIGHTING LAYOUT, ON LARGER PROJECTS SHOW REMOVAL ITEMS ON SEPARATE REMOVAL SHEET.
- 2 SHOW EXISTING LIGHTING AND REMOVAL IF APPLICABLE.
- 3 LEGEND OF ELECTRICAL ITEMS.
- 4 GENERAL ELECTRICAL NOTES.
- 5 QUANTITIES THIS SHEET.

PAGE 21-2 - LIGHT STANDARD DETAILS

PAGE 21-3 - ELECTRIC HANDHOLE DETAILS

REVIEW STANDARD DETAILS AND NOTES TO MAKE SURE ALL ITEMS SHOWN ARE APPLICABLE TO THE PROJECT.


NOTE: SEPARATE SHEETS FOR REMOVAL AND TEMPORARY LIGHTING ARE REQUIRED WHEN REPLACING EXISTING LIGHTING.
FOR QUESTIONS REGARDING LIGHTING PLANS CONTACT DESIGN SUPPORT AREA - ELECTRICAL UTILITIES UNIT.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63


			FINAL R.O.W.
AUTH	DATE	NO.	REVISION

3


LEGEND




EXISTING STREET LIGHTING UNIT




PROPOSED FIBERGLASS CONDUIT




EXISTING CONDUIT




LIGHT STANDARD WITH 12' ARM ON FOUNDATION & FRANGIBLE TRANSFORMER BASE



1-3" DIRECTIONAL BURIAL CONDUIT



HANDHOLE



CONDUIT, DIRECTIONAL BORE, 3"

4

NOTES

1. THE SYSTEM OPERATING ENGINEER (GRAND HAVEN LIGHT & POWER) SHALL BE NOTIFIED 48 HOURS PRIOR TO WORKING ON LIGHTING CIRCUITS.

2. HIGH PRESSURE SODIUM LUMINAIRE SHALL BE MEDIUM DISTRIBUTION IES, TYPE III SEMI-CUTOFF.

3. THE EXISTING LIGHTING SHALL BE IN OPERATION DURING CONSTRUCTION. ANY DAMAGES TO THE LIGHTING OR TRAFFIC SIGNAL SYSTEM CAUSED BY THE CONTRACTOR SHALL BE REPAIRED AT THE CONTRACTOR'S OWN EXPENSE, WITHIN A REASONABLE TIME, AS DIRECTED BY THE ENGINEER.

4. 250W HPS LUMINAIRE SHALL BE EQUIPPED WITH REGULATOR TYPE BALLAST FOR 120V OPERATION.

5. LIGHT STANDARD SHALL BE ALUMINUM OR GALVANIZED STEEL.

5

QUANTITIES THIS SHEET

140 Ft

Conduit, Directional Bore, 3 inch

605 Ft

Conduit, Schedule 40, 3 inch

200 Ft

Conduit, Fiberglass, 3 inch, Structure

2475 Ft

DB Cable, in Conduit, 600V, 1/C*6

945 Ft

Cable, Equipment Grounding Wire, 1/C*6

5 Ea

Hh, Heavy Duty Cover

4 Ea

Light Std Fdn

4 Ea

Light Std, Frangible Transformer Base

4 Ea

Light Std Arm, 12 foot

4 Ea

Light Std Shaft, 30 foot or less

4 Ea

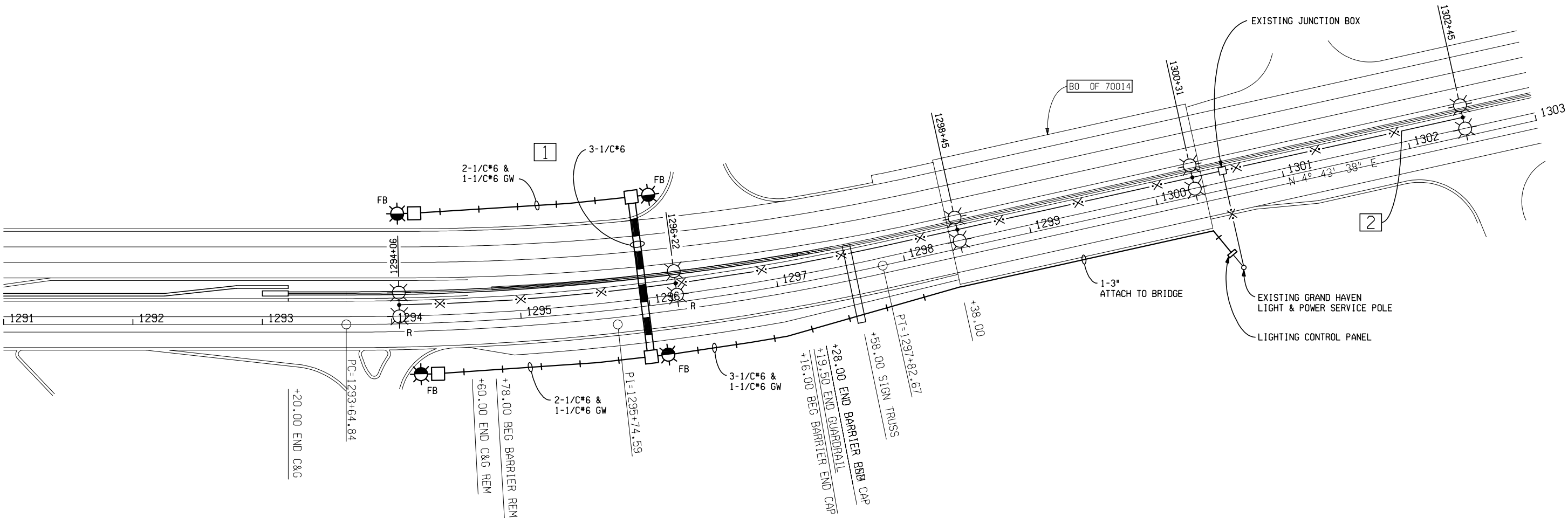
Luminaire, 250W High Pressure Sodium

1 Ea


Lighting Control Panel

1 Ea

Wood Pole, Fit Up, Sec Serv Pole



STREET LIGHTING ALTERATIONS 21-1



US-31 GRAND HAVEN

DATE

SCALE
1" = 40'

CONT. SEC.

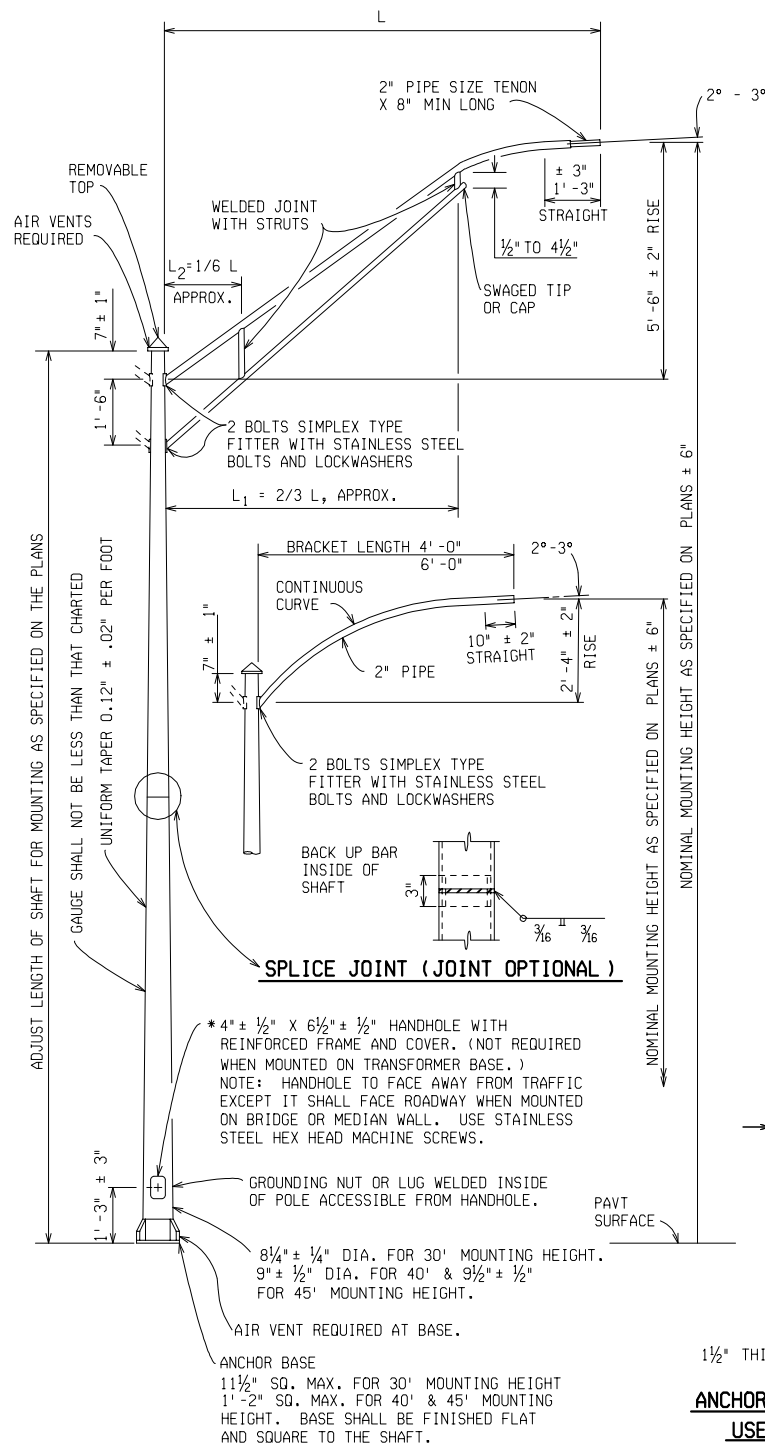
JOB NO.

DESIGN UNIT

SHEET NO.
R.O.W CONST.

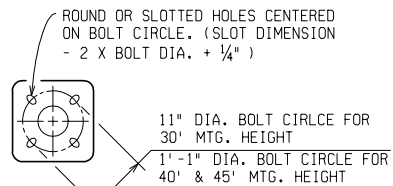
FILE NAME: 83417\ackxover\1q.dgn
CHECKED BY:
DATE:
WORKED ON BY:
DATE:

BRACKET LENGTH 8'-0", 10'-0", 12'-0" -- 2" PIPE TOP MEMBER AND 1 1/2" LOWER MEMBER.
BRACKET LENGTH 15'-0" -- 2" PIPE BOTH MEMBERS.
BRACKET LENGTH 17'-0" -- 2 1/2" PIPE TOP MEMBER AND 2" PIPE LOWER MEMBER.
(ALUMINUM BRACKET ARMS SHALL NOT BE LESS THAN 2" DIA. PIPE)



TYPICAL LIGHT STANDARD DESIGN

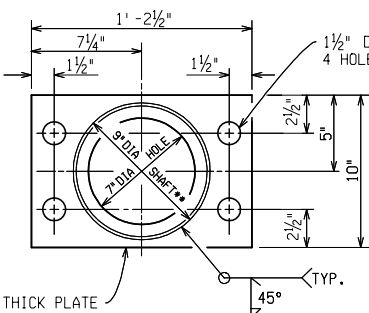
* THE HANDHOLES SHALL BE PLACED SO THEY DO NOT INTERSECT THE LONGITUDINAL SEAM WELD ON THE POLE.



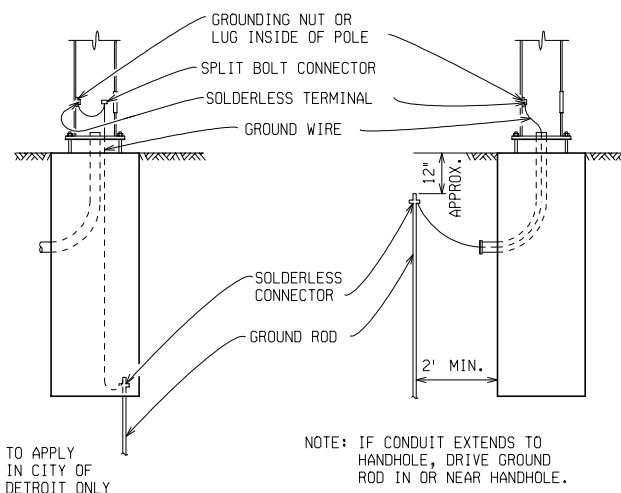
ANCHOR BASE PLAN

NOTES:

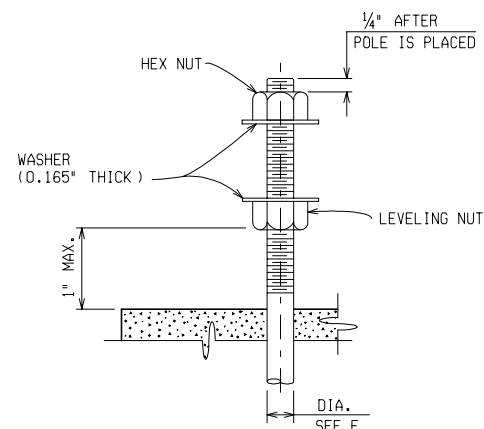
1. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE CURRENT MICHIGAN DEPARTMENT OF TRANSPORTATION SPECIFICATIONS FOR ELECTRICAL CONSTRUCTION.
2. USE DETAIL "M" ANCHOR BOLTS. ANCHOR BOLT LENGTH "F" IS LENGTH BEFORE BENDING. FINAL STANDARD ADJUSTMENT SHALL BE LEVELED BY USE OF LEVELING NUTS.
3. SUPPLY BRACKET ARM FITTERS FOR EACH ARM USED ONLY.
4. STANDARD MOUNTED ON TRANSFORMER BASES SHALL HAVE THE SAME DIMENSIONS AS OTHER BASE TYPES, EXCEPT SHAFT LENGTH.
5. USE SAME ANCHOR BOLTS FOR TRANSFORMER BASE AS FOR CORRESPONDING ANCHOR BASE TYPES.
6. BOLT CIRCLE DIMENSION "A" FOR ANCHOR BOLTS MUST BE EXACT. ANCHOR BOLTS ARE TO BE SET TO A TEMPLATE.
7. TOP OF FOUNDATION MUST EXTEND 1" MIN. OUTSIDE OF LIGHT STANDARD BASE.
8. IF FOUNDATION IS WITHIN 30 FEET OF HANDHOLE, CONDUIT MAY BE RUN DIRECTLY TO HANDHOLE.
9. WHEN ALUMINUM TRANSFORMER BASE IS USED, SUPPLY 1/8" ELASTOMERIC FABRIC BOUND PAD FOR MOUNTING BETWEEN FRANGIBLE TRANSFORMER BASE AND FOUNDATION.
10. ANCHOR BOLTS SHALL BE THREADED 1 INCH MORE THAN THE BOLT PROJECTIONS LISTED UNDER ITEM "E" IN THE TABLE ON THIS SHEET.
11. ANCHOR BOLTS GREATER THAN 1 INCH SHALL USE 8UN THREADS
12. WHEN A FRANGIBLE BASE IS CALLED FOR ON THE PLANS, NO LEVELING NUT IS TO BE USED, FRANGIBLE BASES SHALL BE MOUNTED FLUSH WITH TOP OF FOUNDATION.



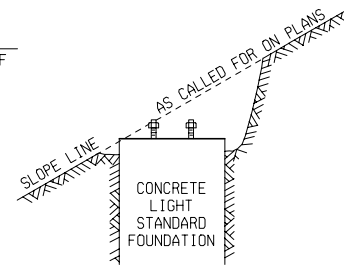
**ANCHOR BASE DETAIL FOR LIGHT STANDARDS
USED ON 10" TOP CONCRETE BARRIER**



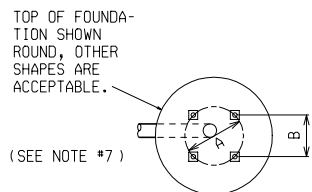
LIGHT STANDARD GROUNDING DETAIL



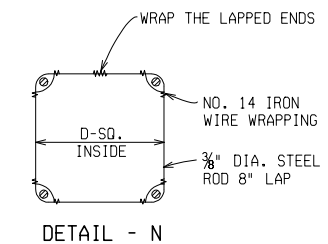
DETAIL - M



**FOUNDATION DETAIL
(ON FILL OR CUT SLOPE)**

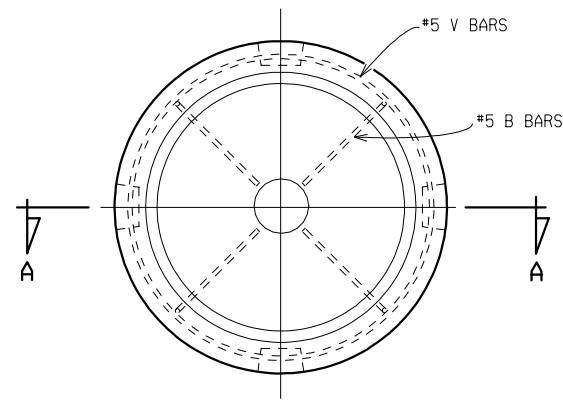


TYPICAL LIGHT STANDARD FOUNDATION

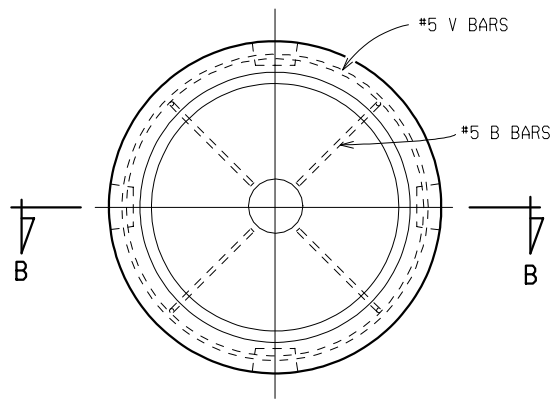


ANCHOR BOLTS AND TIE ROD

LIGHT STANDARD FOR	A	B	C	D	E	E FRANGIBLE BASE	STEEL POLES GA. (MIN.)	F	MINIMUM ANCHOR BASE THICKNESS	ALUM. POLES MIN. SHAFT THICKNESS
30 FT. MOUNTING HEIGHT WITH 4 OR 6 FT. SINGLE OR DOUBLE BRACKET ARM.	11"	7 3/4"	5'-0"	8 3/4"	4 5/8"	2 5/8"	11	1" Ø X 3'-4"	1"	.188"
30 FT. MOUNTING HEIGHT WITH 8,10,12 FT. SINGLE OR DOUBLE BRACKET ARM.	11"	7 3/4"	6'-0"	8 3/4"	4 5/8"	2 5/8"	11	1" Ø X 5'-0"	1"	.188" SGL.ARM .219" DBL.ARM
30 FT. MOUNTING HEIGHT WITH 15 FT. SINGLE OR DOUBLE BRACKET ARM.	11"	7 3/4"	6'-0"	8 3/4"	4 5/8"	2 5/8"	7	1" Ø X 5'-0"	1"	.188" SGL.ARM .219" DBL.ARM
30 FT. MOUNTING HEIGHT WITH 17 FT. SINGLE OR DOUBLE BRACKET ARM.	11"	7 3/4"	6'-0"	9"	5 1/4"	3"	7	1 1/4" Ø X 5'-0"	1 1/8"	.188" SGL.ARM .219" DBL.ARM
40 & 45 FT. MOUNTING HEIGHT WITH 4,6,8,10,12,15,17 FT. SINGLE OR DOUBLE BRACKET ARM.	1'-1"	9 1/4"	8'-6"	10 3/4"	5 1/2"	3 1/4"	11 GA. UP TO 15' BKT.ARM 7 GA. FOR 15' & 17' BKT.ARM	1 1/4" Ø X 5'-0"	1 3/8"	.219" LOWER SECTION .188" UPPER SECTION



PLAN VIEW



PLAN VIEW

OPENING

18" FOR LIGHT DUTY COVER
24" FOR HEAVY DUTY COVER

FRAME

FRAME & COVER
SEE MATERIAL NOTES

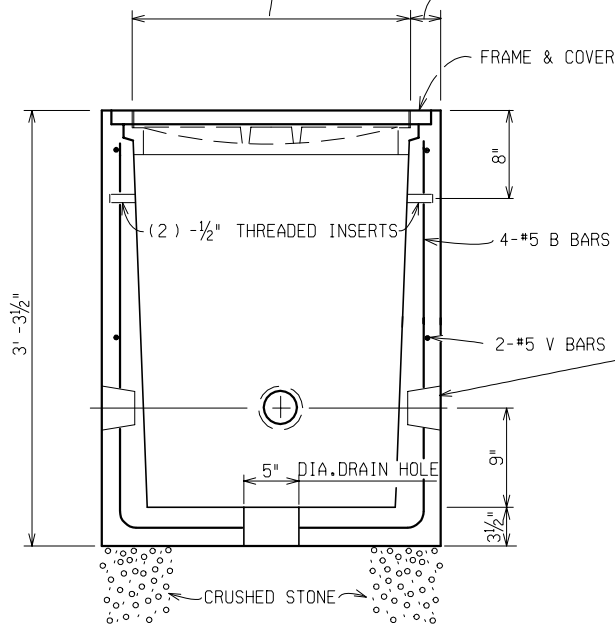
WALL THICKNESS

MIN. WALL THICKNESS FOR LIGHT
DUTY COVER - 2 3/4", FOR HEAVY
DUTY COVER - 3 1/2". SHOULD THE
WALL BE TAPERED, A 0.3°/FT.
SLOPE SHALL BE USED.

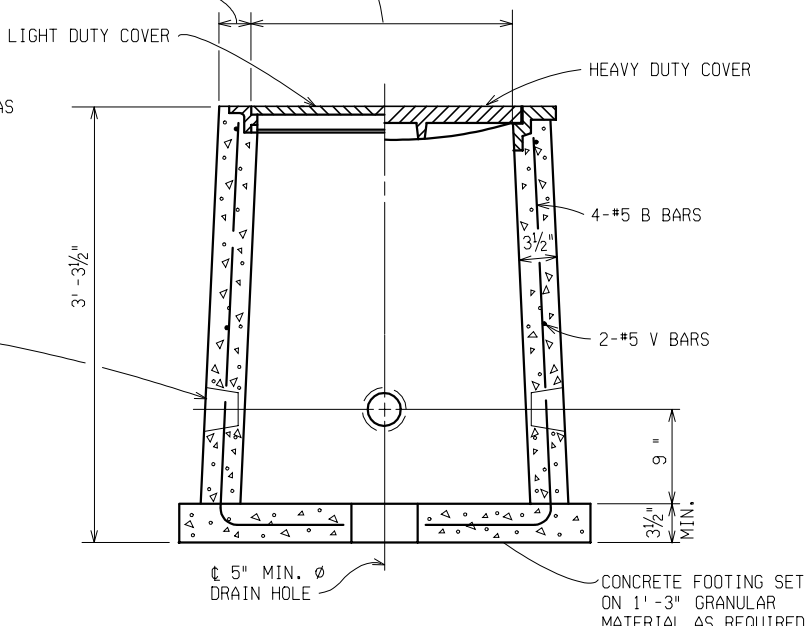
STEEL REINFORCEMENT

REINFORCEMENT SHALL BE #5 BARS AS
SHOWN OR AN EQUIVALENT AREA OF
STEEL USING WELDED WIRE MESH.

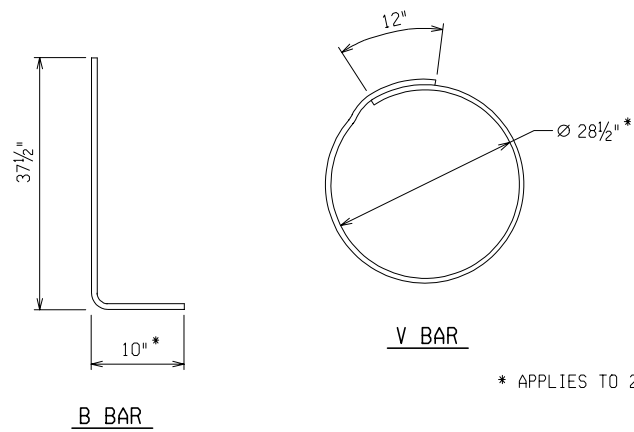
ENTRANCE HOLES AS REQUIRED
FOR 3" & 4" CONDUIT.
ADDITIONAL OPENINGS SHALL BE
PROVIDED AS REQUIRED. HOLES
MAY BE DRILLED IN THE FIELD.



SECTION A-A PRECAST CONCRETE HANDHOLE



SECTION B-B PRECAST CONCRETE HANDHOLE

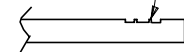


V BAR

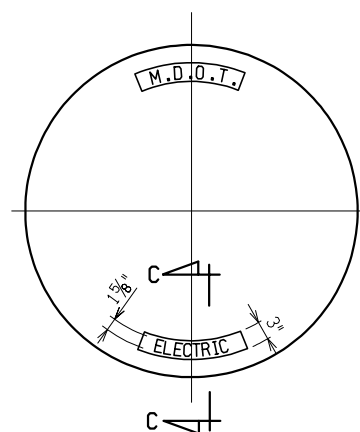
B BAR

* APPLIES TO 24" HANDHOLE

ALL LETTERING TO BE 1/4" HIGH
AND FLUSH WITH SURFACE OF COVER



SECTION C-C



TOP VIEW

GENERAL NOTES:

- THE MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE CURRENT M.D.O.T. STANDARD SPECIFICATIONS.
- THE CONTRACTOR MAY CONSTRUCT THE HANDHOLE STRUCTURE OF CONCRETE MASONRY, OR OF PRECAST REINFORCED CONCRETE.
- THE INNER SURFACE OF THE HANDHOLE SHALL BE SMOOTH.
- ALL CASTINGS SHALL BE CLEANED BY SAND BLASTING.
- THE SEATING FACE OF THE COVER AND THE SEAT FOR THE COVER ON THE FRAME IF REQUIRED, SHALL BE GROUND OR MACHINED SO THAT THE COVER SHALL HAVE AN EVEN BEARING ON ITS SEAT TO PREVENT ROCKING OR TILTING.
- THE CASTINGS SHALL BE FREE OF POURING FAULTS, BLOW HOLES, CRACKS, AND OTHER IMPERFECTIONS. THEY SHALL BE SOUND, TRUE TO FORM AND THICKNESS, CLEAN AND NEATLY FINISHED AND SHALL BE COATED WITH COAL TAR PITCH VARNISH.
- HANDHOLE SHALL BE EQUIPPED WITH CABLE RACK AND HOOKS TO TRAIN CABLE.
- LIGHT DUTY COVER SHALL BE BOLTED TO FRAME WITH NOT LESS THAN 2 COUNTERSUNK HEX HEAD BRONZE BOLTS.
- PRECAST HANDHOLE WITH HEAVY DUTY COVER SHALL BE SET ON A CONCRETE SLAB .

MATERIAL NOTES:

- HEAVY DUTY COVERS SHALL BE CASTINGS WHICH MEET THE REQUIREMENTS OF THE CURRENT SPECIFICATIONS FOR GRAY IRON CASTINGS ASTM DESIGNATION A48 AND SHALL HAVE A MINIMUM STRENGTH AS PROVIDED FOR CLASS NO. 30B GRAY IRON CASTINGS.
- ALL CONCRETE MASONRY SHALL BE GRADE 30M.
- THE HEAVY DUTY COVER & FRAME SHALL BE EAST JORDAN IRON WORKS #2860 TYPE "A" OR NEENAH FOUNDRY #R-6052 D FOR CIRCULAR COVER OR AN APPROVED EQUAL.
- LIGHT DUTY COVER AND FRAME SHALL BE EAST JORDAN IRON WORKS #2982A-18 OR NEENAH FOUNDRY #R-6012 D FOR CIRCULAR COVER OR AN APPROVED EQUAL.

ELECTRIC HANDHOLE DETAILS					
DATE	SCALE	CONT. SEC.	JOB NO.	DESIGN UNIT	SHEET NO.
					R.O.W CONST.
	NONE				